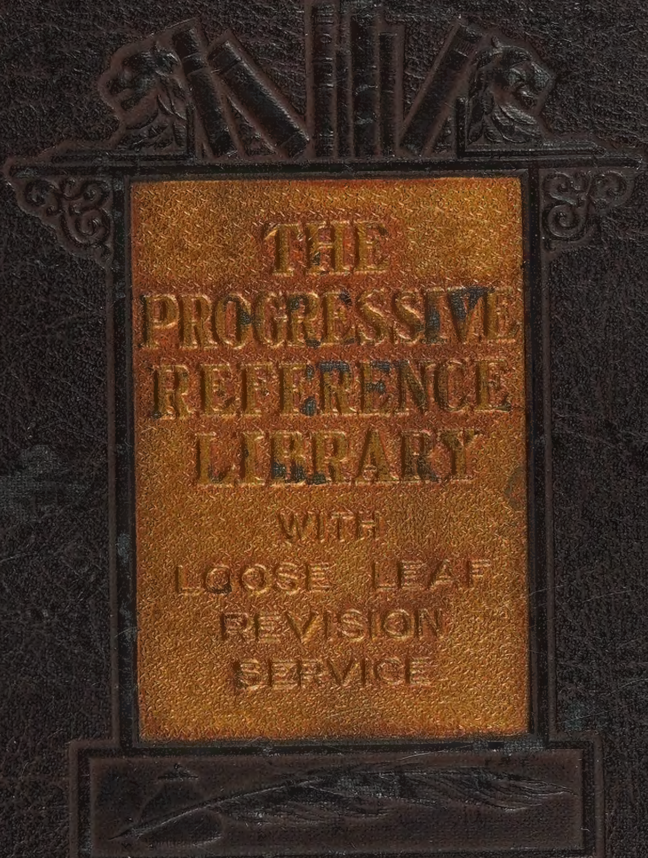

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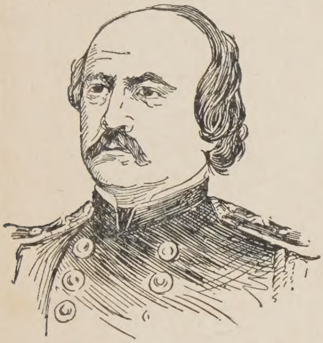
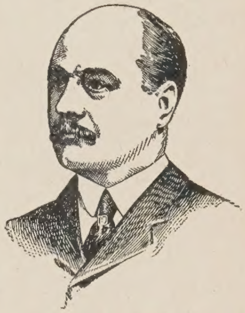
farm produce. Among the chief buildings are the county courthouse, the public library, and several banks and business houses. The city is in the natural gas and oil belt, and engages in the manufacture of machinery and implements. It has extensive flouring, woolen, and planing mills. Gas and electric lights, street railways, pavements, and fine schools and churches are among the conveniences. It was settled in 1798 and became incorporated in 1803. Population, 1900, 10,853; in 1920, 23,779.


BENJAMIN F. BUTLER.

BUTLER, Benjamin Franklin, soldier and statesman, born in Deerfield, N. H., Nov. 5, 1818; died Jan. 11, 1893. He graduated at Waterville University, Maine, and was admitted to the bar in 1841. In 1853 he became a member of the Massachusetts Legislature, was elected to the State Senate in 1859, and attained eminence in the practice of law at Lowell. He was a delegate to the national Democratic convention at Charleston in 1860, and took part in the adjourned session held at Baltimore. At the beginning of the war he was appointed brigadier general, and on April 17 marched to Annapolis, Md., and occupied Baltimore without opposition. For this he was rewarded by President Lincoln, who commissioned him major general in the Federal service. He captured Fort Clark and Fort Hatteras soon after, and the next year led an expedition to the Gulf of Mexico. He landed at New Orleans on May 1, 1862, and immediately took possession of the city, remaining there until December, when he was relieved by Maj. Gen. Banks. In 1863 he commanded the troops in Virginia and North Carolina, the next year suppressed riots in New York, and returned to Massachusetts in 1865. He was elected to Congress as a Republican the next year and served until 1879, with the exception of the term beginning in 1875. In 1882 he was elected Governor of Massachusetts as the Democratic nominee, and in 1884 was the presidential candidate of the Greenback-Labor and Anti-Monopoly parties. He received 133,000 votes, but carried none of the states. Butler was a prominent factor in the reconstruction of the Southern States, and in the impeachment of President Johnson. He took high rank among the ablest jurists and statesmen of his time.

BUTLER, Joseph, theologian, born at Wantage, England, May 18, 1692; died June 16, 1752. He graduated at Oriel College, Oxford, and entered the ministry of the Presbyterian Church. In 1738 he was made Bishop of Bristol, and after twelve years was transferred to Burham. His chief literary work is entitled "The Analogy of Religion, Natural and Revealed, to the Constitution and Course of Nature."


N. M. BUTLER.

BUTLER, Nicholas Murray, educator, born in Elizabeth, N. J., April 2, 1862. He attended the public schools and graduated at Columbia University in 1882, and subsequently studied in Berlin, Germany. After holding a number of minor positions at Columbia University, he was made professor of ethics, philosophy, and psychology, and in 1890 was chosen first dean of the faculty of philosophy. He was the first president of the New York College for the Training of Teachers, now the Teachers' College, and in 1894 served as president of the National Educational Association. In 1901 he succeeded Seth Low as president of Columbia University, which institution of learning was improved greatly under his efficient administration. He edited "The Teachers' Professional Library," "The Great Educators' Series," and "Columbia University Contributions to Philosophy and Education." His essays and addresses were published in a volume entitled "The Meaning of Education." He contributed to many periodicals and in 1891 founded *The Educational Review.*

BUTLER, William Allen, author and lawyer, born in Albany, N. Y., Feb. 20, 1825; died in 1902. He graduated at the New York University, studied law in the office of his father, Benjamin F. Butler, and built up a successful practice in New York City. His satire entitled "Nothing to Wear" was first published in *Harper's Weekly,* and was subsequently issued in book form and translated into German and French. Other books include "The Cities of Art and Early Artists," "Barnum's Parnassus," "Lawyer and Client," and "Out-of-the-Way Places in Europe."

BUTLER, William Orlando, soldier and statesman, born in Jessamine County, Kentucky, in 1791; died Aug. 6, 1880. He studied at Transylvania University and was admitted to the bar, but entered the military service at the outbreak of the War of 1812. In 1813 he took part in the two battles on Raisin River and was wounded, and in 1815 rendered service in the Battle at Chalmette, better known as the Battle of New Orleans. He took up the practice of law in 1817, served three terms in the Kentucky State Legislature, and was a member of Congress in 1839-43. In 1844 he was a candidate for Governor on the Democrat ticket, but was defeated by the Whig candidate, who received a greatly reduced majority. During the Mexican War he commanded as a major general of volunteers, distinguished himself at Monterey and the City of Mexico, and superseded Scott as commander of the American army shortly before the close of the war. In 1848 he was nominated for Vice President on the ticket with Cass. He published "The Boatman's Horn, and Other Poems."

BUTTE (būt), a name frequently applied to mountains whose peaks are more than 8,500 feet above the sea. In this sense the word is used quite frequently in Canada and England, and to some extent in the United States, but in the last mentioned country it applies more generally to a hill or knoll rising abruptly on a plain or plateau. Many small buttes are located in the Rocky Mountains and on the high plains of North Dakota and eastern Montana. They were formed by the erosion of ancient plateaus, being the more solid portion of earth or clay mixed with rock.

BUTTE, a city of Montana, county seat of Silverbow County, sixty-four miles south of Helena, on the Great Northern, the Northern Pacific, the Chicago, Milwaukee and Saint Paul, and other railroads. In its vicinity are productive deposits of gold, silver, and copper. The chief buildings include the county courthouse, the Federal post office, the State School of Mines, the city hall, and the opera house. It has a public library of 35,000 volumes. The manufactures include cigars, clothing, earthenware, and machinery. It has a large local and jobbing trade. The municipal improvements are electric and gas lights, pavements, street railways, sewerage, and waterworks. Butte was settled in 1864 and was first incorporated in 1879. Population, 1900, 30,470; in 1920, 41,611.

BUTTER (bŭt'tẽr), the fatty substance of milk or cream solidified by churning. Formerly butter was made wholly of cream that was collected from time to time by skimming the surface of milk, where it accumulates by gravitation. This method is still employed on the smaller farms, but in dairying it has been superseded by the use of the cream *separator* (q. v.). After a sufficient quantity of cream has been gathered, it is placed in a *churn,* or in some other suitable apparatus, and is agitated until butter forms. When the churning has been finished, the butter is taken out and is worked thoroughly to free it from milk, and about two per cent. of salt worked into it. The milk of a well-fed cow contains about four per cent. of butter. In the newer process of making butter by separating the cream from the milk by a separator, the centripetal principle of revolution is applied to the process, and later the cream is agitated in a churn propelled by steam or electric power. In the larger creameries the whole milk is churned. The agitation in churning ruptures the fat globules and causes them to collect in masses.

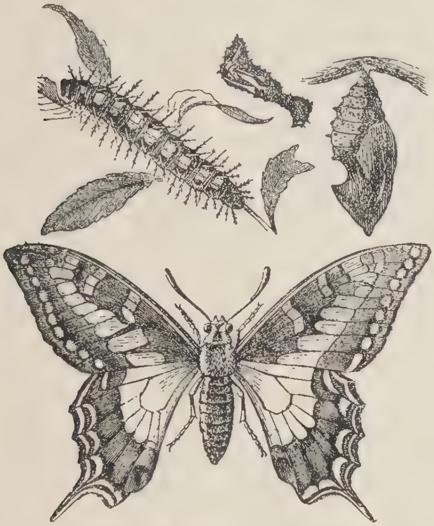
Much care must be exercised in the packing and storage of butter, as it is very sensitive to its environments and its flavor is easily impaired. When the butter is delivered by the creamery to the customer or is shipped only a short distance, it is usually put up in the form of bricks, but when shipped a long distance it is packed in tubs or firkins. Farmers either make the butter themselves and sell it to grocers, or they sell the milk or cream to the creamery or cheese factory. The modern refrigerator cars and cold-storage plants permit transporting butter long distances or keeping it many months without danger of injury.

The production of butter is an important industry. Denmark and Holland excel all other countries in the quality of the butter produced, and both are large exporters. The butter industry of Canada and the United States has grown constantly the past decade, owing to the introduction of the creamery system. The annual production in the United States is valued at $275,500,000. Chicago, New York, and Boston are the leading butter markets, but it is an article of extensive commerce in many localities and in most countries. An artificial butter, called oleomargarine, is made of beef fat, or suet, and vegetable oils. A general law places a heavy tax upon it, in order to protect the production of dairy butter. However, it forms an important article of commerce.

BUTTERCUP, a name popularly given to several varieties of plants of the ranunculus family. The taller species grow to a height of two or three feet, the smaller varieties form runners, while others grow in water. They flower in May; the flowers have a shining yellow color and are double in several species. They were so named because formerly illy informed people thought the yellow color of butter was due to cattle eating them, which they never do.

BUTTERFIELD, Daniel, soldier, born in Utica, N. Y., Oct. 31, 1831; died July 17, 1901. He attended public schools and Union College, where he graduated in 1849, and later engaged in the express business. In 1861 he joined the Federal army. The same year he was raised to the rank of brigadier general of volunteers, and commanded a corps in the Peninsular campaign at Gaines' Mill, where he was wounded. He commanded in the second Battle of Bull Run, and took part in the battles at Fredericksburg, Chancellorsville, and Gettysburg. In 1863 he was with the army of the Cumberland at Chattanooga, and subsequently marched with Sherman through Georgia to the Atlantic. He resigned from the service in 1869, was United States treasurer at New York City in 1870, and had charge of the Washington centennial parade in New York City in 1889. In 1862 he published "A System of Calls, Picket and Outpost Duty, Corps Badges and Flags."

BUTTERFLY, the common name of a large class of diurnal insects, that is, insects which are active during the daytime. The butterflies and moths constitute the Lepidoptera, or scaly-winged insects. They exhibit much similarity to other kindred insects. Many species are found in all parts of the world, though in some regions they are seen only in the summer season. They are more numerous in the tropical climates than in the colder zones. They are found as far north as Greenland and Spitzbergen, where they extract nectar from the flowers, while in warmer climates they inhabit the shade of moist foliage in the woods and jungles. Most species fly by day, while the hawk moths move about by twilight, and the moths by night.



CATERPILLAR, PUPA, AND BUTTERFLY.

The life of the butterfly may be divided into three periods or stages. It begins when the *larva* or *caterpillar* is hatched from the egg, when it is wormlike in form. In this stage it lives from three to ten months, depending upon the locality and the season, and during all this time it takes in food with much greediness. During the second stage, when it is known as the *pupa* or *chrysalis,* it takes in no food whatever. While in this period of development, the pupa of the moth is inclosed in a cocoon of silk, while that of the butterfly is incased in a chrysalis with a hard outer case. Some species remain in this stage only a few weeks, but some do not emerge from it before the following spring. In the third stage the insect is known as the *imago* or *perfect insect.*

The eggs are laid on the leaves of plants, but only the kinds fed on by caterpillars are selected for the purpose, and they are hatched by the heat of the sun. When laid in the summer, they hatch in a few days, but in cold climates the eggs hatch in the spring following their deposit. When hatched in the spring, they live as caterpillars during the greater part of the summer, while those hatched late in the summer remain in the chrysalis or pupa state during the winter and develop into butterflies in the spring.

Butterflies have four wings. They are richly colored on both sides and are separate from each other and held upright when at rest. The wings are covered with beautiful scales or feathers, as perfect as those found in the most beautiful birds, but are so small that several hundred thousand occupy a square inch. The wings possess great power, considering the size of the insect, and many species are able to soar in the air with a steady and continuous motion, while others in the tropical regions are migratory, often moving many miles in large numbers. The smaller species have a zigzag flight, and stop to rest frequently on leaves of trees and grasses.

Butterflies are admired for their beauty. They are active in delightful weather, and are usually associated with the most beautiful vegetation and natural scenery, but the caterpillar is a very uncouth appearing insect and gives annoyance by its ravages in fields and gardens. Some caterpillars are associated in large colonies, sometimes several hundred, and in this form are very destructive to fruit trees, especially apples and plums. The fully developed butterflies are short lived, serving the purpose of depositing their eggs and then die. There are no less than 50,000 species in the different climates, and about one-eighth of them are found in America north of Mexico. The species include every color, and in size range from very small insects to the largest found in the tropical countries, some measuring nearly a foot across the wings. Some are remarkable for the likeness they bear to the leaves, flowers, bark, or vegetable life on which they feed, this often serving as a protection against their enemies.

BUTTERFLY WEED, a plant native to North America, found widely distributed in Canada and the United States. It is allied to the so-called milkweeds, and is known in some sections as *pleurisy root.* It has bright orange-colored flower clusters and the root is used as a medicine, chiefly as an expectorant.

BUTTERINE (bŭt'tĕr-ĭn). See **Oleomargarine.**

BUTTERNUT, or **White Walnut,** a wide-spreading forest tree of America. It ranges from the Atlantic to the Missouri River and beyond, has nearly smooth bark and serrated and pointed leaves, and grows to a height of fifty to seventy-five feet. It flowers in May and bears an oblong-ovate nut that ripens in September. The kernel is much used for eating, while the bark yields a dye, and the wood is useful for cabinet work and for fuel. It is not so valuable as the wood of the black walnut, being lighter in weight and less hardy.

BUTTERWORT (bŭt′tẽr-wûrt), a plant common to the marshy grounds of Europe and Canada. The flowers of most species are purple in color, and have a two-lipped calyx. The leaves are thick and somewhat greasy to the touch, and secrete a glutinous fluid that holds small insects, which are consumed by the plant for food.

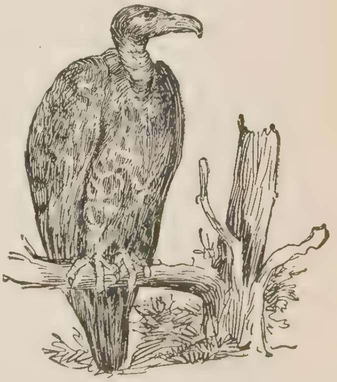
BUTTERWORTH, Benjamin, lawyer and statesman, born in Warren County, Ohio, Oct. 22, 1837; died in Thomasville, Ga., Jan. 16, 1898. He was appointed to the office of commissioner of patents by President Arthur in 1883, to which position he was reappointed in 1897 by President McKinley. He was the author and tireless supporter of the compulsory army retirement act.

BUTTON, a small circular disk used chiefly to fasten together parts of a dress and for ornamentation. It is made of a large variety of materials, including pearl, bone, horn, wood, ivory, copper, rubber, and brass. The manufacture of buttons is an enterprise of vast importance, though as such it does not date to remote antiquity. An article of this kind was not used by the Greeks and Romans to any great extent, who fastened their loose garments with strings and girdles, or used pins, brooches, or buckles. Hooks and eyes have been in use many centuries, but the extensive use of buttons does not date back farther than the 14th century. Birmingham, England, is the chief center of the manufacture of buttons in Great Britain, and this enterprise is developed quite extensively in Canada. In Germany, the United States, and many other countries buttons are made to some extent by convict labor in the penitentiaries. The pearl button industry is centered largely along the Mississippi River, in which freshwater mussels are abundant. Extensive factories are operated at Muscatine and Fort Madison, Iowa, and in many places along the Mississippi River between New Orleans, La., and Red Wing, Minn. Buttons of this class are cut with tubular saws from the shells into the sizes of the buttons desired, after which holes are pierced or drilled, and the button is finished by polishing. Waterbury, Conn., is the center of the metal button industry in the United States, and large quantities are made in Philadelphia. Glass, porcelain, and gutta-percha buttons are manufactured to a considerable extent. Other kinds are those made of celluloid and papier-maché. Many civic societies and other organizations, especially the Grand Army of the Republic (q. v.), wear buttons of metal, usually bronze or brass, on the common garments, and of gold or silver for symbols or ornamentations.

BUTTRESS (bŭt′trĕs), in architecture, a support on the outside of tall buildings, used extensively in bridges which bear a heavy superstructure. The Chaldaeans built rudimentary buttresses to strengthen the walls supporting heavy vaults or roofs, but the more substantial forms came into use at the time of the Byzantine Empire. In Gothic architecture it is an essential feature, especially the so-called flying buttress, which has an arched form and springs from a heavy pinnacled buttress, serving to support a higher portion of the building by transferring its thrust downward to the exterior buttress. In many styles of buttresses more or less ornamentation has been introduced and some are paneled over the entire surface.

BUTYRIC ACID (bû-tĭr′ĭk), one of a number of acids obtained from butter, and contained in various other substances, such as perspiration and cod-liver oil. It is formed in milk by the action of caseine upon the sugar, lactic acid being first formed, and this by its decomposition producing hydrogen and butyric and carbonic acids. When obtained from butter, it is a colorless liquid, and is unpleasant to the odor and taste. Butyric acid gives the rank smell to rancid butter.

BUZZARD (bŭz′zẽrd), the name of a class of birds of prey belonging to the falcon family. The common buzzard of Europe is large and has a heavy body. It is skillful in catching birds, mice, and poultry. About ten or twelve species are found in Canada and the United States, of which three deserve especial note; the *turkey buzzard,* the *brown buzzard,* and the *rough-legged buzzard.* The turkey buzzard is native to the Southern States, where it is very common and useful as a scavenger and carrion-vulture, and for that reason is commonly protected by law. This bird is allied to the condor of South America, and, like it, has the head and neck bare. It is about the size of a turkey, is dark or black in color, with wide-spreading wings, and is seen in large numbers hovering around the carcass of a dead animal. The brown buzzard is deep brown in color. It nests in trees and ledges of rocks and feeds on worms, insects, birds, and small mammals. The rough-legged buzzard is feathered to the toes. Buzzards are distributed more or less in all the continents.



TURKEY BUZZARD.

BUZZARD'S BAY, an inlet from the Atlantic Ocean, on the southeast coast of Massachusetts, extending northeasterly thirty miles.

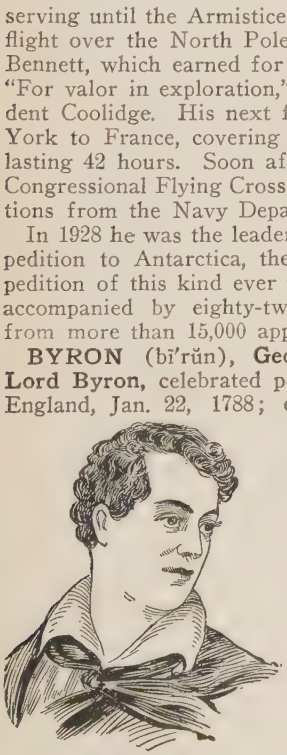
BY-LAW (bī′lạ), an organic law or regulation made by the members of a corporation, society, or some similar body to govern its members and officers in the official proceedings.

BYNG, Sir Julian Hedworth George, soldier, born in England, Sept. 11, 1862. He was educated for a military career and served in the Sudan campaign in 1884, and subsequently took part in the South African War. In 1914 he had charge of the British forces sent to Antwerp, where he aided in the withdrawal of the Belgian army. He took part in campaign of the Dardanelles in 1915 and in 1916 commanded the Canadians on the Somme and at Vimy Ridge. In 1917 he superseded Sir Allenby and defeated the Germans at Cambrai. From 1921 to 1926 he was Governor-General of Canada, and was succeeded by Lord Willingdon.

BYRD, Richard Evelyn, aviator and naval officer, born at Winchester, Va., Oct. 25, 1888. He studied at the Shenandoah Valley Military Institute, the University of Virginia, and the United States Military Academy, graduating from the last mentioned in 1912. In 1915 he married Marie D. Ames of Boston, Mass.

He became an ensign in the United States Navy in 1912, was advanced rapidly, and became commodore after a polar flight in 1926. During the World War he was in the aviation service, serving until the Armistice. In 1926 he made a flight over the North Pole with the late Floyd Bennett, which earned for him the gold medal, "For valor in exploration," presented by President Coolidge. His next flight was from New York to France, covering 4,200 miles, in 1927, lasting 42 hours. Soon after he was given the Congressional Flying Cross and twenty-two citations from the Navy Department.

In 1928 he was the leader of an exploring expedition to Antarctica, the most elaborate expedition of this kind ever undertaken. He was accompanied by eighty-two scientists selected from more than 15,000 applicants.



LORD BYRON.

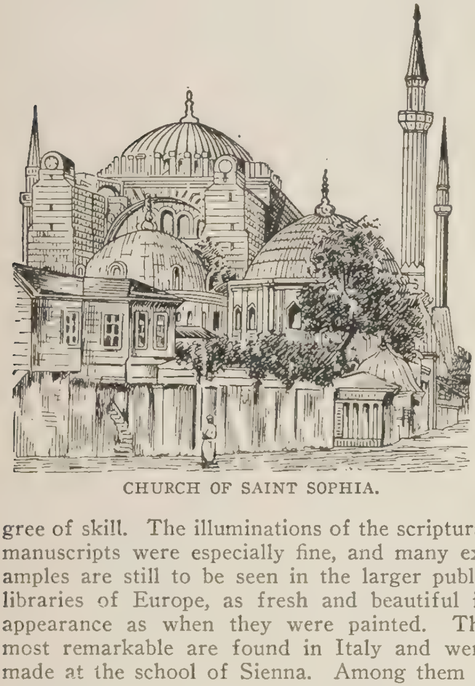
BYRON (bī′rŭn), **George Gordon Noel, Lord Byron,** celebrated poet, born in London, England, Jan. 22, 1788; died at Missolonghi, Greece, April 19, 1824. He was the only son of Capt. John Byron and Catherine Gordon, heiress of Aberdeenshire. His early education was entirely under the care of his mother, but later he was sent to Harrow, and in 1805 entered Trinity College, Cambridge. While at Cambridge he wrote his volume of verses entitled "Hours of Idleness," published at Newark in 1807. These verses contain little of educational value, though they are not absolutely without merit, and were fiercely criticised by Lord Brougham in a sarcastic article in the *Edinburgh Review.* Byron replied to the criticism in his satire, "English Bards and Scotch Reviewers," in which great power of wit and mastery of versification were displayed, and Byron rose to a high point in the estimation of the public. He visited the shores of the Mediterranean and traveled through Turkey and Greece. While there he commenced his best work, "Childe Harold's Pilgrimage," and published the first two cantos of it in 1812. It was a marked success, and was followed by "The Bride of Abydos," "The Siege of Corinth," and other able works that caused his acquaintance to be courted by the best society of England.

In 1815 Byron married Isabella Milbanke, daughter of Sir Ralph Milbanke, a baronet. The marriage proved unfortunate, owing to Byron's excitable nature and his association with ill-chosen companions. After the birth of his child, Ada, in December, 1815, a permanent separation between him and his wife took place, and Byron left England the next year with the avowed intention of never again returning. He proceeded to France, visited the fields of Waterloo and Brussels, viewed the beauties of the Rhine, the natural scenery of Switzerland and Italy, and took up his abode in Venice and later removed to Rome. While at Rome he completed the third canto of "Childe Harold," which was followed by "Dream, and Other Poems," "The Prisoner of Chillon," and later by "The Lament of Tasso." In 1820, while at Ravenna, he published five cantos of "Don Juan," and the following year he removed to Pisa. While at Pisa he coöperated with Shelley and Leigh Hunt in publishing a journal called *The Liberal.* Here he finished the exquisite poem "Don Juan" and worked on "The Deformed Transformed," his last poetic effort.

When the Greeks made their struggle against Turkey for independence, he concluded to enter the army and serve the cause of Grecian liberty. He proceeded to Missolonghi in 1824 and secured the enlistment of 500 Suliotes at his own pay, and undertook to drill them for service. Great exertion and a severe cold terminated in a fever, which resulted in his death. Byron ranks as one of the best poets of England, estimated from the standpoint of his productions, and has been called "The grand Napoleon of the realms of rhyme," on account of the suddenness and splendor of his literary career. His influence is still felt in the literary world, in which his productions are exercising a marked influence. While at the Hellespont he performed the historic feat of swimming across the water to demonstrate his ability to imitate the exploits told of in the Greek story of "Hero and Leander." His body was brought to England and buried in Newstead Abbey.

BYZANTINE ART (bĭ-zăn′tĭn), the art resulting as the outgrowth of the rise of Constantinople, when the barbarians of Western

Europe were pouring into Rome. The city was then called Byzantium, hence the name of this peculiar art and of the mighty Eastern Empire. At Byzantium the artists gathered and nursed the sparks of artistic beauty in the Middle Ages, which kindled the fires of modern art, after the Revival of Learning. This peculiar art dates from the early part of the sixth century, called the Justinian Age. It was retarded by the fall of the Eastern Empire under the sway of the Crusaders in 1204, and finally terminated with its destruction in 1453. Byzantine painting was executed with care and some degree of skill. The illuminations of the scriptural manuscripts were especially fine, and many examples are still to be seen in the larger public libraries of Europe, as fresh and beautiful in appearance as when they were painted. The most remarkable are found in Italy and were made at the school of Sienna. Among them is a picture of the Virgin in the Church of Saint Dominico at Sienna, by Guido, which was executed in 1221, and is a production of exquisite beauty. Interest in the painting of this time is induced by its influence on the later paintings in Italy of Cimabue, Giotto, and even of Raphael.



CHURCH OF SAINT SOPHIA.

The sculptures of Byzantium well deserve admiration and respect, especially when compared with the later plastic works of Rome. All the figures are laden with drapery and costume, which largely obscure the nobler and freer features admired by the ancients. It was influenced more or less in this respect by the spread of Christianity. The most beautiful specimens include the "Forty Saints," now in the museum at Berlin. While relief work and statuary were profuse, the crosses, candlesticks, plates, lamps, cups, altars, and all portions bore decorations and were richly adorned with precious metals, mosaics, or frescoes.

Byzantine architecture influenced largely the construction of public edifices of Western Europe, especially the churches of Germany and those built in the early Norman period. The finest work included in this form, and, in fact, typical of it, is the church of Saint Sophia, still the greatest mosque of Constantinople. It was rebuilt by the order of Justinian and completed in 537 A. D. It was the largest and most magnificent of twenty-five temples built in the capital, and many similar structures were erected throughout the empire by its pious emperor. Its style influenced the construction of the churches of Ravenna, the Saint Mark's at Venice, and many of Western Europe; among them is the notable Cathedral of Aix-la-Chapelle, which is purely in the Byzantine style. The style presents endless varieties of the Roman arch, characteristic cupolas, and profuse ornamentation. The fresco paintings, rounded windows, and bold projection mouldings, ornamented with foliage, are conspicuous.

BYZANTINE EMPIRE, a powerful country of antiquity, with its seat of government at Byzantium, now called Constantinople. In history it is sometimes spoken of as the Eastern, the Lower, the Greek, and the East Roman Empire. It was founded in 395 A. D., by the two sons of Theodosius the Great, Honorius and Arcadius, when he divided the Roman Empire. Arcadius was made emperor of Western Europe, but that portion soon passed into the hands of the barbarians. Honorius became ruler of the Byzantine Empire, which existed nearly a thousand years, from the death of Theodosius the Great to the fall of Constantinople in 1453. The origin of the empire dates back to the removal of the capital of the Roman Empire from Rome to Byzantium by Constantine, in 330 A. D., which city was named Constantinople in his honor. The seat of government was changed partly because the barbaric Germanic tribes were pressing hard against Rome, and because of the spread of Christianity in the East, a consequence following the movement of the Roman influence toward the East. In its greatest prosperity the Byzantine Empire included Syria, Pontus, and Asia Minor in Asia; Egypt in Africa; and Macedonia, Crete, Greece, Thrace, and Moesia (now Bulgaria) in Europe. The territory was successively enlarged and diminished by victory and defeat until the fall of Rome in 476, when its territory was merged into other dominions by reason of the conquests attained by the Huns, Goths, and Vandals.

The first period of the empire proper dates from 395 to 716. The period is distinguished by the reign of Theodosius II. (408-450), partly under the regency of his sister, Princess Pulcheria, who carried on successful wars against the Persians in the East and the ravages of Attila and the Huns in Thrace, in the West. He was succeeded at his death in 450 by his sister, Pulcheria, who reigned with extraordinary dignity, and was succeeded by Leo I. He was succeeded by Zeno the Isaurian (474-491) in whose reign a disastrous fire destroyed the famous library of Byzantium. Within his reign also occurred powerful invasions of the Goths and Vandals.

The reign of Justinian I., known as the Age of Justinian, was the most efficient in the history of the empire. It is distinguished by the rise of painting, sculpture, and architecture. In this reign the empire was extended; the great churches were constructed, including Saint Sophia and several hundred others; and the famous "Code of Justinian" was written. He was succeeded by Justinian II., who was unfortunately harrassed by the Persians in the East and the Avars in the West. His reign was followed by Maurice, a weak and lawless ruler, who was overthrown by Heraclius. The latter reigned successfully from 610 to 641. His achievements in war are regarded equal to those of Scipio and Hannibal. Though several possessions were lost, those remaining were closely united and the empire became more distinctly Greek.

From 716 to 1057 followed a period of prosperity. It was marked by successful defenses against the Bulgarians and Saracens. The period witnessed the great internal religious controversy that tended to weaken the empire against foreign foes. The controversy was between the Iconoclasts and the Established Church. The former, who opposed the presence of images in places of public worship, were led principally by Leo III. This long dispute resulted in the separation of the Greek Church from the Roman Catholic Church in the last half of the 9th century; the formal separation occurred at the excommunication of the Greek Church in 1054. In this period the empire possessed various distinguished rulers, among them Empress Irene, who sought to unite the Eastern and Western empires by an endeavor to marry Charlemagne, after blinding her own son, but she failed for want of support in her own nation. In the reign of Constantine VII., in the middle of the 10th century, many Russian and Hungarian princes embraced Christianity and Christianized their people. In the beginning of the 11th century the Bulgarians were conquered, but the Turks began to threaten Italy from the East, while the Normans became aggressive from the West.

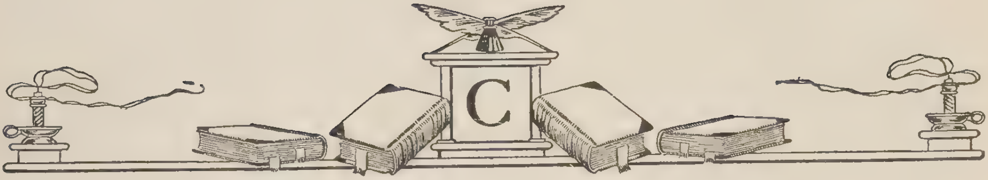
From 1057 to 1204 the empire gave evidence of a slow but constant decline, owing to the attacks of the Crusaders and the rise of Turkish power. The Crusaders had a marked effect upon Constantinople as they pressed forward to Asia Minor, and finally came into open conflict with the emperors. Alexis made a treaty with the second Crusaders, by which he was to acquire territory conquered by them, but their plans were not carried out. The Normans in the West became even more powerful in their attacks. However, Constantinople was captured by the Crusaders in 1203, and by them Isaac was restored to the throne, having been previously dethroned by Alexis. The latter and his sons were put to death the next year.

From 1204 to 1261 the Latins occupied the empire, following the second capture of Constantinople by the Crusaders in that year. It was now commonly called the Latin Empire of Rumelia, and Count Baldwin of Flanders became the first emperor. At this time it was divided into various kingdoms and was made tributary to the Venetians and French. Latin occupation was marked by harmful influences, since both art and culture degenerated, and its former greatness was forever lost. In 1261 the Latin Empire vanished, but many of the smaller principalities still remained.

From 1261 to 1453 the final fall was accomplished by the rapid rise of Turkish power. A dynasty was founded by Michael Palaeologus, the ruler of Nicaea, in 1261, which remained in control until the final fall of the empire, and is known as the dynasty of Palaeologi. He made fruitless efforts to reconcile the Latin churches and to unite the Greeks as one mighty people. He was hard pressed by the Turks, but they became even more powerful in the reign of his son, Andronicus II., who lost Adrianople, in 1361, and afterward Macedonia and Albania. Sultan Amurath was succeeded by Bajazet, a strong Turkish warrior, who captured Philadelphia, in Asia Minor, and laid siege to Constantinople, but the city was saved by the Tartars under Timour, who invaded Western Asia, which caused a retreat of the Turks to defend their countries in the East. Various rulers followed successively until the Turks attacked Constantinople with an army of 400,000 men under Sultan Mohammed, April 6, 1453. The garrison of 8,000 men made a noble defense, but was finally conquered, and Constantine, the last of the Byzantine emperors, was slain in the battle. The cross on the dome of Saint Sophia was replaced by the crescent of the Moslem. Christianity was exterminated, and the surviving inhabitants were sold into slavery.

The Byzantine Empire had not stood in vain. It served as a mighty bulwark against the rising power of the Turks until the spark of Western culture and the spirit of advancement were fanned into a flame that developed the highest learning of modern civilization. It was the means of protecting the treasures of ancient Greece and Rome from destruction by the Western tribes in the long period of the Middle Ages, preserving them safely until the rise of learning, which spread like fire over Western Europe after the fall of the last Constantine.

BYZANTIUM (bĭ-zăn'shĭ-ŭm), a city founded in 667 B. C., on the Thracian Bosporus, by emigrants from Megara, which rose rapidly into commercial importance. Its situation on the shores commanding Asia and Europe made it a powerful factor in early history. In 330 A. D. its name was changed to Constantinople and it was made the metropolis of the Roman Empire. See **Constantinople.**



C, the second consonant and the third letter of the English alphabet, and of all alphabets derived from the Roman. It has the same position in the alphabet as the Greek *gamma,* from which it was derived through curving the form. In the English it has two distinct sounds; before *e, i,* and *y* it is sounded as *s,* and before *a, o,* and *u,* as *k.* Before *k,* as in trick, it is silent.

In music *C* is used to represent the first note of the diatonic scale of *C* major, corresponding to *do* of the Italian. It is employed as an abbreviation for cent and in expressing the scale of the Centigrade thermometer. In combination with *B,* as B. C., it signifies before Christ.

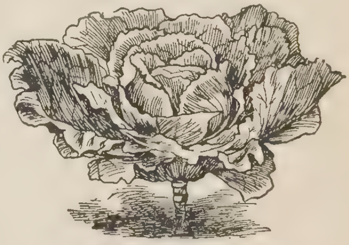
CAB, a vehicle drawn by one horse, having either two or four wheels. In large cities cabs are used commonly for conveying passengers and are under police regulations. The name is also applied to the part of the locomotive in which the engineer and fireman are stationed.

CABAL (kȧ-băl′), a term used to denote a small party united for political or personal ends. Previously it was used to designate a secret body or cabinet organized to further political designs. It was applied especially to the infamous ministry of Charles II. of England in the 17th century, which was constituted of Clifford, Ashley, Buckingham, Arlington, and Lauderdale, the initial letters making the word *cabal.*

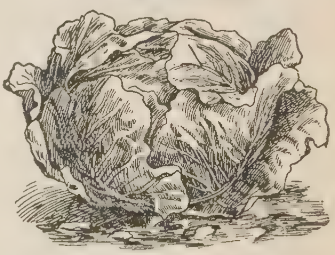
CABALLERO (kä-vȧl-yȧ′rô), **Fernan,** novelist, born in Cadiz, Spain, Dec. 25, 1796; died April 7, 1877. She descended from a German family that settled in Spain, and is known by the pseudonym of Cecilia Böhl von Faber. Her writings are based largely on the local customs of different parts of Spain, which she delineates in an interesting and popular style. Among her chief books are "The Sea Gull," "The Bird of Truth," and "Air-Built Castles."

CABATÚAN (kä-vȧ-to͞o′än), a city of the Philippines, on the island of Panay. It is located on the Tigum River and has a growing trade in fruit, tobacco, and merchandise. The buildings consist largely of small huts, but some of the business houses are substantial and are constructed of brick and stone. Population, 16,495.

CABBAGE (kăb′bȧj), the name of a plant which is cultivated extensively for culinary purposes and for feeding cattle. It is native to Europe, and in its wild state attains a height of two or three feet. The wild plants have no heads, the heads of our garden and field plants having been obtained by propagation. It shows a greater tendency to vary its form through cultivation than almost any other plant, and is esteemed very highly among the vegetables. The familiar species that are cultivated extensively include the *Savoy,* the *broccoli,* the *common cabbage,* and the *cauliflower.* The common cabbage is the most important. It includes the red, or purple, and the white varieties; the delicate Portugal, and the coarser tree or cow cabbage. The stems of the cow cabbage, which reach a height of ten to twelve feet, are used for walking sticks, umbrella handles, and as material for farm buildings. Cabbage is cultivated on a small scale in nearly all the gardens, usually in connection with other vegetables, but in some localities it is grown extensively in large fields. As a food it is boiled, made into *sauerkraut,* or is eaten as a salad. In most climates the seed is sown in a hotbed early in the spring, usually in March, and the plants are set in the ground as soon as the frost is out of the ground. Both early and late species are grown, the former maturing in July and the latter in autumn. The heads may be kept over winter in a cold, damp cellar, or by putting them in pits head down and covering with straw and earth. In the southern portions of the United States the



PURPLE CABBAGE.



WHITE CABBAGE.

cabbage industry is a successful enterprise, and large quantities of the product are shipped to the northern markets almost the entire year.

CABBAGE INSECTS, the insects that infest the cabbage plants. These pests include a number of insects more or less harmful or destructive. The *cabbage moth* is widely distributed in North America. It is the most destructive in the larva state, when it is known as cabbage worm, or kale worm, and is particularly harmful to the young plants. About a dozen species are common to Canada and the United States, and most of them are very prolific, having two or three broods in a season. The caterpillar of these insects have a green color of about the same shade as the cabbage, and they attack the heads as well as the leaves. A plant louse, known as the *cabbage aphis,* infests the leaves of cabbages and turnips. It is greenish below and brownish above. The *cabbage bug,* a brilliantly colored insect, hibernates in tufts of grass and weeds and attacks the young plants.

CABBAGE PALM, the name of several species of palm trees, so named from their large terminal buds, which are eaten like cabbage. The trees in the West Indies belonging to this class are species of the *areca* palm, and the cabbage palm of the United States is the palmetto.

CABBAGE ROSE, a species of roses noted for its fragrance, and sometimes called the Provence rose. It is cultivated extensively for the manufacture of rosewater and attar.

CABINET (kăb'ĭ-nĕt), a body of advisers or ministers, usually composed of the heads of executive departments, so named from the cabinet or private apartment in which the monarchs of England consulted their privy councilors. The present Cabinet of England may be said to date from the time of William III., who presided over its meetings, and during his reign the ministry was placed on a Parliamentary basis; that is, all of the members of the Cabinet were made members of one or the other of the houses of Parliament. The Prime Minister, who is appointed by the Chief Executive, selects from the chief officers of the government those he desires to have in his Cabinet. He submits their names to the crown for approval, and he is the presiding officer at the meetings. There is no restriction as to the division of the cabinet officers between the two houses of Parliament, or even as to their number, except that not less than eleven are to be chosen, including the first lord of the treasury, the lord president of the council, the lord chancellor, the chancellor of the exchequer, the lord privy seal, the first lord of the admiralty, and the five secretaries of state. The meetings are secret and no record of the proceedings is kept, and each member is bound by its decisions or must resign from the ministry. This body must stand or fall together and is the responsible government of the British empire. Though an essential part of the government, it has never been officially established by an act of Parliament.

In the United States the Cabinet is authorized by the Constitution. The President may require the principal officers of the cabinet departments to submit an opinion in writing on any subject relating to the duties of their respective offices. It is customary for the President to call the cabinet officers into sessions and act as the presiding officer, the meetings being designed for the discussion of matters of grave importance to the success of the government. There are ten departments, of which the Secretary of State, of the Treasury, of War, and Postmaster General were established in 1789. The Secretary of the Navy was raised to the dignity of a cabinet officer in 1798, of the Interior in 1849, the Attorney General in 1870, and the Secretary of Agriculture in 1889. The Department of Commerce and Labor was organized in 1903, and was reorganized in 1913 as the two departments of Secretary of Commerce and Secretary of Labor. The President nominates the cabinet officers, subject to the approval of the Senate. It is customary to select for cabinet positions men who belong to the same political party as the President. These officers receive a salary of $12,000 per year.

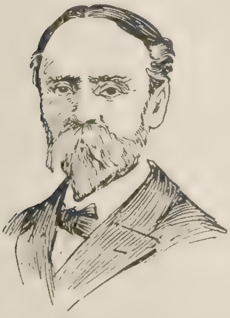
In 1886 the so-called presidential succession law was passed, which provides for the succession to the office of President in case both the President and Vice President die or are removed from office by conviction after impeachment. The order of the succession begins with the Secretary of State, then Secretary of the Treasury, of War, Attorney General, Postmaster General, Navy, and Interior. The others are not affected by it, because they were not created until some years after the passage of this provision. It may be found convenient to use the word St. Wapniac to recall the order of the succession, as the letters in the word indicate the initials of the departments in regular order.

There is no principal cabinet officer in the United States, but the position as Secretary of State is usually regarded the most important. In most countries the cabinet has similar duties to those discharged by cabinet officers in the United States, but many are given larger powers, or modified duties are placed upon them. In Switzerland and all the American republics the Cabinet is responsible, not to the Legislature, but to the Chief Executive, while in France the Cabinet is more largely responsible to the legislative branch of the government.

CABLE (kā'b'l), a strong rope exceeding two inches in circumference, originally made of hemp, but now made largely of iron or copper wire, and of iron links. It is used for anchoring ships, in building suspension bridges, for moving cable cars, etc. In making a cable of hemp or coir, the yarns are twisted to form a *lissum.* Three lissums twisted in an opposite direction form a *strand,* and three strands twisted in the direction of the yarns in a lissum form a *cable.* Chains are now preferred to hempen cables on board of ships, because of greater durability, compactness for stowage, and superior strength.

CABLE CARS, a class of vehicles used to carry passengers. They are propelled by an endless cable wire that makes a continuous circuit over pulleys, through a subterranean channel, by means of a stationary engine located at some point of the line where two loops of the cable meet. They are less expensive to maintain than horse cars, but are more costly than the electric system. The average cost of construction per mile of a cable railroad system is about $350,000, but there is a considerable variation with differences in the geological strata. Cable car lines are being fast superseded by electric railroads in cities, but they continue to serve a useful purpose in mountain lines, as they constitute the only practical means yet devised to successfully ascend steep elevations. The Stanserhorn Railway in the Alps of Europe makes an ascent of sixty per cent. and attains an altitude of 6,235 feet. The cost per horse power, furnished by electricity and applied to cables, is only $20 per year. The Catskill, New York, elevated cable railway, built in 1892, is 7,005 feet long and rises 1,605 feet. In this system the cable is supported by pulleys and the machinery is controlled by levers. The cable road at the Jungfrau, in the Alps, is tunneled the entire length and ascends a grade at an angle of 45°. It is the most remarkable yet devised. All the cars in ascending lines are provided with safety brakes for clutching the rails in case of accident.

CABLE, George Washington, novelist, born at New Orleans, La., Oct. 12, 1844. He received a common school education and became a clerk in his native city. In 1863 he volunteered in the Confederate army and served until the close of the war. Subsequently he studied civil engineering and assisted in the survey of the Atchafalaya River. About 1875 he began to write for the New Orleans *Picayune,* his contributions being mostly poems and humorous sketches. Later he became a contributor to *Scribner's Monthly.* His writings and lectures are made interesting by a successful use of the Creole dialect, and by this means he became popular as a writer both in America and Europe. He gained distinction as a favorite writer and lecturer on the International Sunday School Lessons, in which he showed great interest. Among his best works are "Old Creole Days," "The Creoles of Louisiana," "The Silent South," "Dr. Sevier," "The Negro Question," "Grandissimes," and "True Stories of Louisiana." He died Jan. 31, 1925..



GEORGE W. CABLE.

CABLES, the lines used to carry electric currents, either under water or underground. They are usually known as electric and submarine cables, and the former are used as conductors of electric currents underground, while the latter are those laid on the bed of the ocean, or some other body of water. Electric cables consist essentially of one or more copper wires, frequently a hundred, surrounded by insulators, and the whole is protected by a lead sheathing or a thin coating of rubber. The construction differs very largely, depending upon the use for which the cable is designed. In the larger cities cables are used extensively to carry a number of telephone wires, usually from 50 to 400, each wire protected by insulation and the whole covered by a lead tube, and in this form they may be either aërial or underground. Other forms are used to carry main currents of electricity from the plant to points where it is needed for power. A cable well insulated and protected from the moisture in the atmosphere, attached to glass or porcelain insulators and suspended upon poles, carries an electric current at least 200 miles. By this means power is transferred from Niagara Falls to Buffalo and other points for use in propelling electric cars and machinery.

Submarine cables are imbedded in a compound of gutta-percha and resinous substances, the wires usually consisting of several strands twisted into a spiral, but they are separated from each other by thin layers of india rubber or other padding. External protection is furnished by a coat of Manila yarn or canvas soaked in asphaltum. The cable is thoroughly tested in every part before placing it in the water, and is dropped from a steamboat by means of machinery. It lies on the bottom and is not fastened, except where it lands, and the ends are connected with transmitting and receiving apparatus. The message is recorded in the Morse alphabet by means of ink and a glass tube in the form of a siphon on paper, which moves uniformly over a small platform or table as the message is written.

The lines of ocean cables operated in 1923 aggregated about 350,000 miles, about one-fifth of which were owned by governments and the balance by private corporations. These lines furnish communication with all the leading ports of the world. The Atlantic cable, from Heart's Content, Newfoundland, to Valentia Bay, Ireland, was the first of the great oceanic cables, completed in 1866, but others were laid and ample telegraph communication is now maintained among the leading seaports and commercial centers of the world. Two great cables were laid recently across the Pacific Ocean, the British cable and the American cable. The former is 7,986 miles long and was completed in 1902. It was constructed conjointly by the governments of Canada, Australia, Great Britain, and New Zealand. The line extends from Vancouver, British Columbia, by way of the Fiji Islands to the Norfolk Islands. whence branches extend to Queensland, Australia, and to New Zealand. The American cable is owned and controlled by the Pacific Commercial Cable Company. It is 7,613 miles long and was completed in 1903. This line extends from San Francisco, Cal., to Honolulu, thence to the Midway Islands, thence to Guam, and thence to Manila, the capital of the Philippine Islands.

The first experiment with a cable was made by S. F. B. Morse, of New York, in 1842, from Castle Garden to Governor's Island. Cyrus W. Field organized a company with a capital of $1,750,000, in 1854, with the intention of constructing a cable across the Atlantic. This company began active work in 1857, but the effort was unsuccessful and resulted in a loss of 280 miles of cable. In the following year the first cable was completed from Newfoundland to Valentia. The first message, sent on August 6, was: "England and America are united by telegraph; Glory to God in the highest; on earth peace, and good will toward men." About 400 messages were sent across the ocean, when the cable failed to work. The next attempt was made in 1866, which resulted in an entire success. It was laid by the *Great Eastern*. The news of a treaty of peace between Prussia and Austria was the first message sent across the ocean.

CABOT (kăb'ŭt), **George,** statesman, born in Salem, Mass., Dec. 3, 1751; died April 18, 1823. He was educated at Harvard and went to sea. In 1776 he was a member of the provincial congress of Massachusetts, served as a member of the State convention which adopted the United States Constitution, and in 1790 was elected to the United States Senate as a Federalist. In 1814 he was chosen president of the Hartford convention, where he supported the financial schemes of Alexander Hamilton.

CABOT, John, founder of the British claim to North America, born at Genoa, Italy. While very little is known of his life and nothing of his death, it is thought that he settled in England about 1470, where he was naturalized in 1476. He sailed on a voyage of discovery from Bristol in 1497, under the authority of letters patent from the king, Henry VII. His desire to become a navigator was probably due to the discoveries made by Columbus. He was accompanied by his three sons, and discovered a region which he supposed to be the coast of China. On returning to England with the news, he was kindly received by the king and presented with the sum of ten pounds. He made a second voyage to America and visited Labrador and the Gulf of Saint Lawrence, and cruised southward on the coast of New England, perhaps to Cape Cod. Besides the fact that he planted the banners of England and Venice in the new world, nothing is known of his exploits in America, and he disappeared from history after the second voyage.

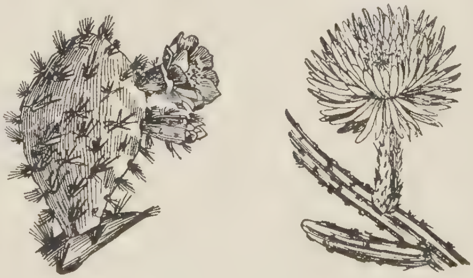
CABOT, Sebastian, eminent navigator, born in Bristol, England, or Venice, Italy, about 1474; died in London, England, in 1557. He was a son of John Cabot, and accompanied his father and two brothers to America in 1497. After discovering the mainland, he visited the northeastern coast. He made an attempt to discover the northwest passage in 1517, for which purpose he visited Hudson Bay, and later explored the shores of Newfoundland, sailing south along the eastern coast as far as Florida. He entered the Spanish service in 1526, explored the coast of Brazil and the La Plata River, and made several efforts to found colonies. In 1530 he landed at Seville, Spain, and later returned to England, where he settled and received a pension from Edward VI. He prepared a number of maps, and was perhaps the first who knew that a new continent had been discovered. Science is indebted to him for the first discovery of the principle involved in the variation of the compass.

CABRAL (kȧ-bräl'), or **Cabrera, Pedro Alvarez,** navigator, born in Portugal in 1460; died in 1526. He was commander of a fleet sent to the East Indies and set out to follow the route of Vasco da Gama by way of the Cape of Good Hope, but winds and strong equatorial currents carried his ships to the coast of Brazil. He took possession of the country and named it Terra Sanctoe Crucis. Later he sailed eastward to India and at Calicut made the first commercial treaty between Portugal and India. Upon the discovery of Cabral were based the claims of Portugal in South America.

CABUL (kā'b'l). See **Kabul.**

CACAO (kȧ-kā'ō). See **Chocolate; Cocoa.**

CACTUS (kăk'tŭs), a genus of plants which are found in the arid regions of America and Africa. About 1,000 species have been studied, but they are distinctly American plants, except a few found in Africa. However, the prickly pear, a species of *Opuntia,* has been grown in Greece and Italy for many centuries. The *cacti* have large, succulent, and fleshy stems with a watery or milky juice of sweetish taste. They



CACTUS PLANTS.

Cactus Opuntia. Cereus.

thrive best in arid districts, usually in sandy, rocky soil. In size they vary from very minute organisms to great trunks thirty feet high. The structure of many species is complex. Some are inclosed with a tough and impermeable skin and covered by pricks and needles. Many species flower profusely, the blossoms opening at night and closing some time after sunrise. The prickly pear and other species are grown extensively as ornamental plants. Some species of the prickly pear bear an edible fruit known as Indian fig. The cardon forests of Mexico, which are confined to the basin of the Gulf of California, are dense and have extensive growths of a species of the *Cereus*. Similar plants are found in southwestern Texas, but the size diminishes gradually as we proceed north to Colorado and Nebraska. Some species possess medicinal properties. The stems of the larger varieties are used for fuel and fencing.

CADDICE FLY (kăd'dĭs), or **Caddis Fly,** a small insect which resembles the moth in many respects. The adult female lays its eggs in water, usually in the form of a double mass attached to the surface of some plant, and the larvae are submerged until they reach the pupa state. The larvae subsist mostly on vegetable forms, but also eat insects and the spawn of fish. About 150 species have been studied and classified. The adult insect has a hairy body and wings, and in some species the body is covered with small scales and is supplied with four wings.

CADE (kād), **Jack,** an agitator of the 15th century, born of Irish parents. In 1450 he assumed the name of Mortimer and the title of captain of Kent. After gathering a following of 16,000 men, he marched to London and encamped on Blackheath. He was aggrieved at the action of certain counselors of the king, and, among other reforms, demanded the dismissal of several officers, but an army was sent against him. After entering London, he executed Lord Say, a favorite of the king. He held London about two days, when a general pardon was granted to his followers in case they would disperse, which caused a scattering of his forces. In endeavoring to escape, he was taken prisoner and killed.

CADET (kȧ-dĕt'), the name applied to the younger son of a noble house to distinguish him from the elder. In France the term is applied to any junior officer. In the United States it is applied to a youth pursuing a course of study at a military academy or school, as, for instance, at the West Point Military Academy or the Naval Academy at Annapolis.

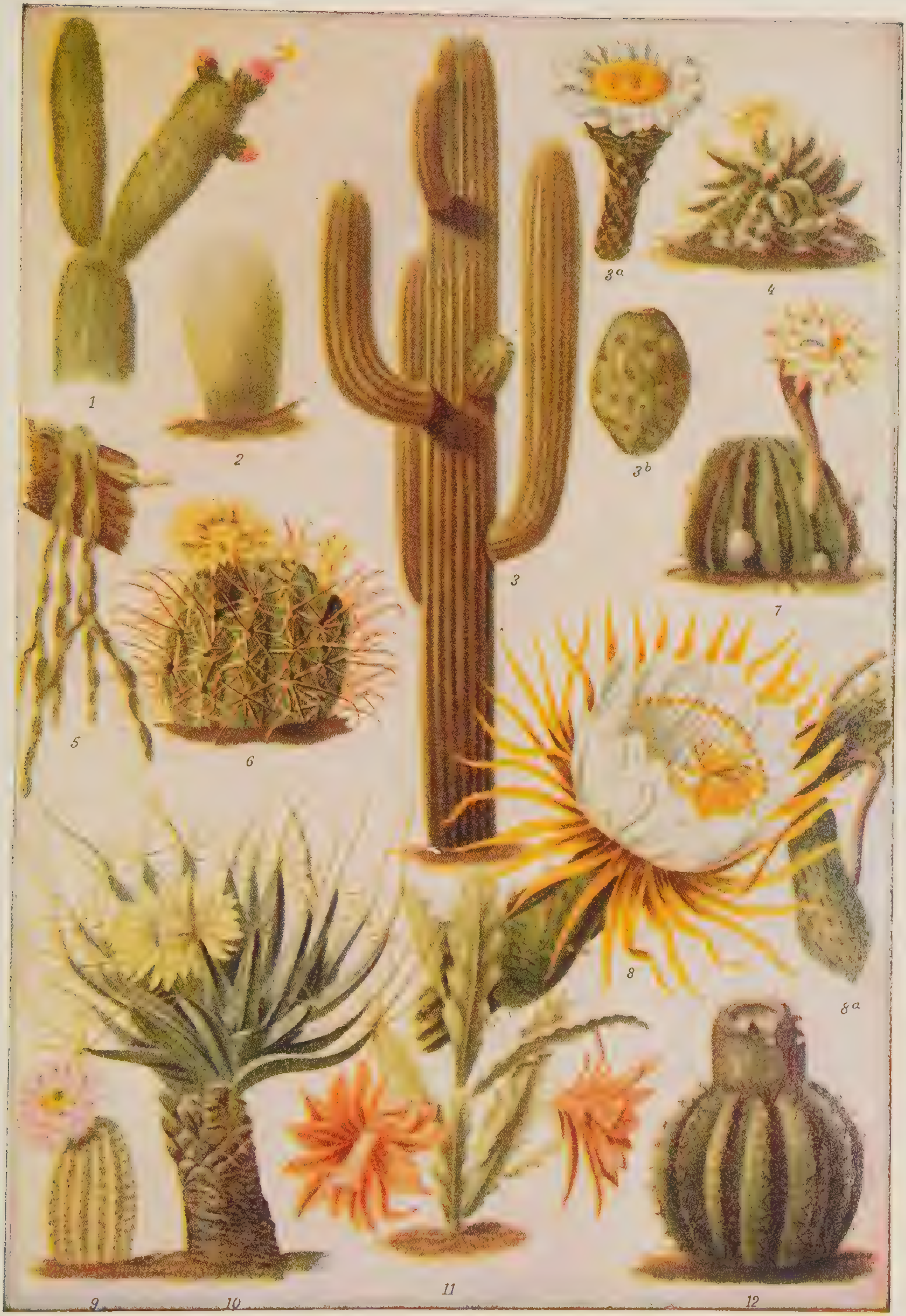
CADILLAC (kăd'ĭl-lăk), a city of Michigan, county seat of Wexford County, 95 miles north of Grand Rapids, on the Ann Arbor and the Pennsylvania railroads. It is nicely situated on Lake Cadillac and Lake Mitchell. The surrounding country produces lumber and cereals. Among the chief buildings are the county courthouse and a number of schools and churches. The manufactures include earthenware, machinery, and lumber products. It has modern municipal facilities, such as waterworks and electric lights, and has a growing trade in produce and merchandise. The first settlement was made on its site in 1871, and its incorporation dates from 1874. Population, 1904, 6,893; in 1910, 8,375.

CADIZ (kăd'ĭz), a seaport city of Spain, capital of the province of Cadiz, on Cadiz Bay, an inlet from the Atlantic Ocean. It is strongly fortified, has well paved streets, and is noted for its cleanliness. Among the principal buildings are several hospitals, the customhouse, the Capuchin convent, the public library, and the old and new cathedrals. It has a bull ring in which seating room is provided for over 12,000 spectators. The lighthouse of Saint Sebastian is a conspicuous and beautiful structure. The city has railroad facilities and an excellent harbor, which furnishes anchorage for a large number of vessels. It has long been the principal naval station of Spain. There are four well-constructed forts, two of which form a defense for La Carraca, an arsenal four miles from the city. Manufacturing is an important industry; the products include woolen cloth, silk fabrics, wine, leather, glass, and machinery.

Cadiz was founded about 1100 B. C. by the Phoenicians, who named it Gadir, and it was long one of the chief commercial cities of Europe. It was conquered successively by the Carthaginians, Romans, Goths, Moors, and Spaniards. The English occupied it in 1596, and in 1810 and in 1823 it was infested by the French. Its greatest prosperity was reached when Spanish-America was in its most prosperous state. With the independence of the South American republics, and the loss of territory in Central America, it began to decline gradually. Population, 1920, 67,174.

CADMIUM (kăd'mĭ-ŭm), a metal found in zinc ores and rarely as a sulphide, of which greenockite is an example. It is allied closely to zinc. The metal was discovered in 1818 while testing for arsenic in zinc wastes. In color it is white, or has a slight bluish cast. It has a high luster when polished and is some harder than tin. The salts of cadmium are serviceable in medicine. Cadmium sulphide is a powder with a lemon-yellow color of great permanency. It is used in coloring soap and in making a pigment known as *cadmium yellow.*

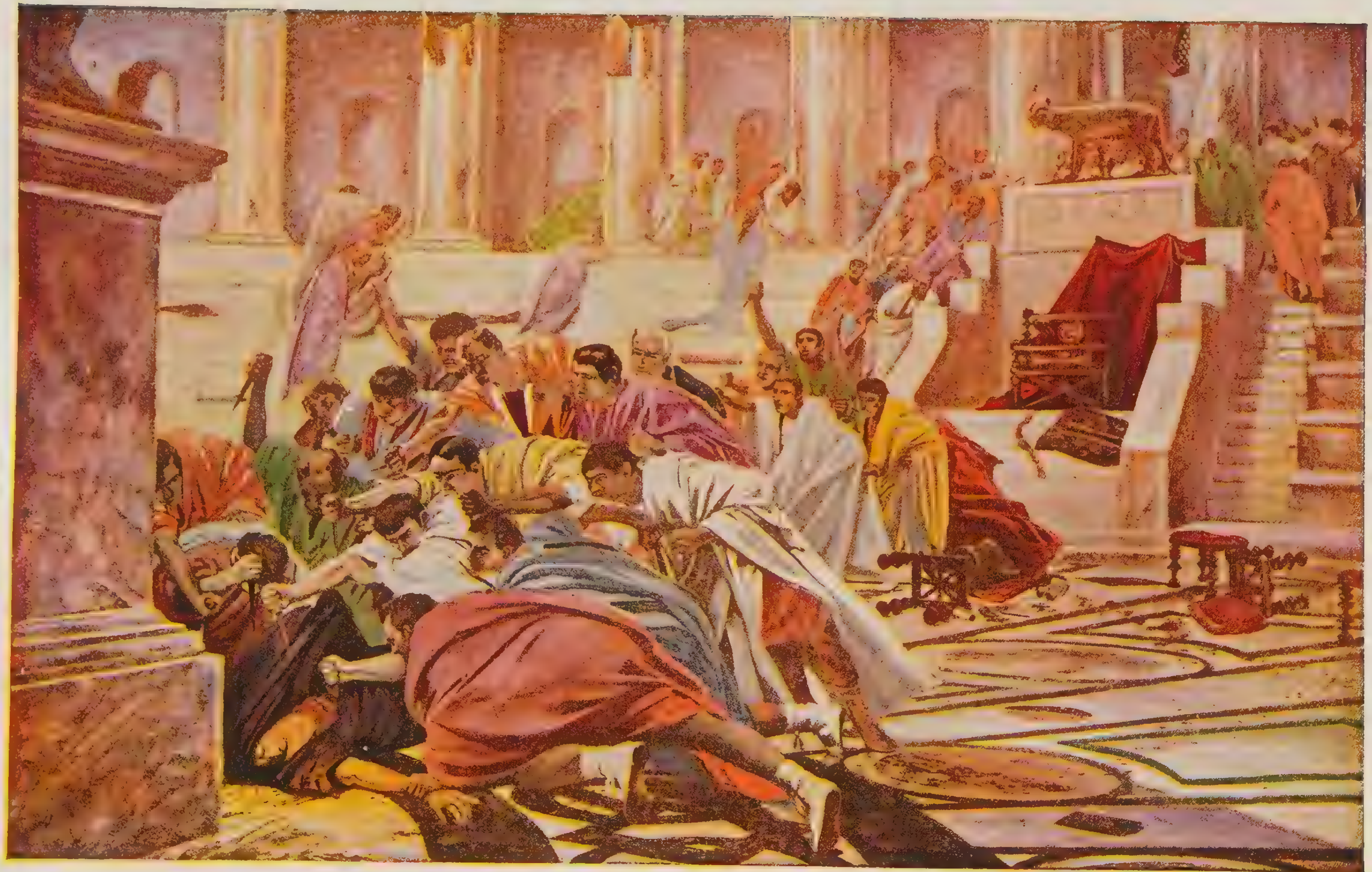
CADMUS (kăd'mŭs), in mythology, the son of Agenor, King of Phoenicia, and the brother of Europa. It is related that Jupiter carried Europa to a distant land and Cadmus was sent in search of her. He inquired of the Delphic oracle as to where he might find her, and was advised to follow a cow which would meet him, but was told that he would be unable to discover the whereabouts of his sister. At the spot where the cow would lie down he was to found a city. He followed her into Boeotia,



(Opp. 428)

SPECIMENS OF CACTI.

1. Cochineal Cactus; 2. Bald-Head Cactus; 3. Giant-Heart Cactus; 3a. Flower; 3b. Fruit; 4. Verruciform Cactus; 5. Juncous Cactus; 6. Ingelable Cactus; 7. Prickly Cactus; 8. Cereus Grandiflorus; 8a. Bud; 9. Prickly Pear; 10. Tree Cactus; 11. Winged Cactus; 12. Melon Cactus.



(Opp. 429) THE ASSASSINATION OF JULIUS CAESAR and on the place where she laid down he built a city and named it Cadmea, afterward changed to Thebes. He slew a dragon which guarded the well sacred to Mars and was directed by Minerva to sow the teeth of the monster, which immediately sprang up as a host of armed men. These men turned upon Cadmus and fought among each other until all but five were slain, and those remaining joined Cadmus in enlarging the new city. He was honored by receiving Harmonia, daughter of Mars and Venus, as his wife, and became the inventor of many useful devices.

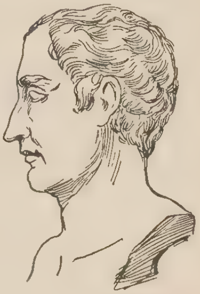
CAEDMON (kăd'mŭn), the earliest Anglo-Saxon poet and writer who wrote in his own language. The time of his birth is unknown, but the year 680 has been assigned as the probable year of his death. He was a tenant or cowherd at Whitby, on the abbey lands. Owing to his skill in forming rhymes, he was placed in a monastery, and afterward became a monk. His life was spent in composing on religious subjects and Bible history. Some of his writings are still preserved. They bear a striking resemblance to "Paradise Lost," and doubtless influenced the great genius of Milton.

CAEN (kän), a city of France, capital of the department of Calvados, 148 miles northwest of Paris. It is on the Orne River, about nine miles from its entrance into the English Channel, and is located in the center of a fertile plain. The streets are clean and well paved with stone and asphaltum. Among the chief buildings are the Church of Saint Etienne, founded by William the Conqueror, a public library of 100,000 volumes, a university with 650 students, and a fine art museum. The manufactures include lace, cotton textiles, cutlery, clothing, and spirituous liquors. Trade is facilitated by several railroads and a maritime canal. In the vicinity are several large establishments devoted to the rearing of Angora rabbits, the skins of which are used in making gloves. Population, 1922, 44,442.

CAESAR (sē'zẽr), the title of the Roman emperors and of the heirs presumptive to the throne. The title was borne by Octavian, the adopted son of Julius Caesar, and passed to his own adopted son, Tiberius. Afterward it was borne by Caligula, Claudius, and Nero. It is perpetuated in the czar of the Russian emperors, and the kaiser of the Holy Roman Empire and of modern Germany.

CAESAR, Augustus. See **Augustus.**

CAESAR, Caius Julius, celebrated Roman statesman, historian, and general, born July 12, 100 B. C.; died March 15, 44. He was the son of a Roman praetor of the same name, studied at Rhodes, and married Cossutia, a wealthy lady of high standing, but divorced her to marry Cornelia, daughter of Cinna. Cinna being one of the principal enemies of Sulla, dictator of Rome, his anger was so excited that Caesar fled from Rome for safety, but returned after the death of Sulla in 78 B. C. He became an advocate for the cause of the people, and gained many high civil and military honors, passing rapidly through the different grades of high office. He rose to influence as a contemporary of Cicero, Brutus, Antony, and other Roman leaders. His high birth, relationship to Marius and Cinna, and great personal talents made him a leader of the popular party. By his generosity and affable manners he won the friendship of the Italians, and attempted to secure the Roman franchise for the Latins beyond the Po River. In 66 he became curule aedile, in which position he extended his popularity by lavishing vast sums of money on public buildings and splendid public games.



C. J. CAESAR.

In 63 Caesar was accused of being implicated in the famous conspiracy of Catiline, which checked his career for a time. The people elected Cicero to the consulship in preference to Caesar, but the latter formed an alliance with Crassus, who possessed colossal wealth, in order to become master of the Roman world. When Pompey returned from Asia, he readily supported Caesar, largely because he desired to have his own plans in Asia ratified and wanted concessions made to his troops. The triumvirate between Caesar, Pompey, and Crassus was now solidified; Caesar was elected to the consulship and Cicero's desire for constitutional government was defeated. Caesar won public favor by distributing land among the poor and supporting the agrarian laws. He supported Pompey in his military requests and relieved the knights of a portion of their taxes.

Caesar hoped to conquer Western Europe for the Roman people. In this way he hoped to gain victories equal to those of Pompey in the East, and with this end in view he secured a military command. In 59 he proceeded to cross the Alps, where he operated nine years, subjecting the country to the Romans. His military achievements included the defeat of the Helvetii in 58, killing over 150,000, while the survivors were permitted to resume their pastoral and agricultural pursuits. He next proceeded to the region of the Rhine, where he defeated Ariovistus, a German prince. In 57 he made a second campaign, in which he attacked the Belgic tribes and defeated them; then subdued the Venetii, and later crossed the Rhine and suppressed a widespread rebellion in Gaul. In the year 55 he made his first invasion of Britain and the following year made a second invasion, which resulted in the subjugation of the Britons. His victories in Britain were recognized as extremely important by the Roman senate. Two thanksgiving periods were decreed, one for fifteen days and the other for twenty, a distinction accorded to him for the first time.

In 53 Caesar proceeded against the Gallic tribes to reduce them to obedience, and in 50 accomplished the final victory over all the Gauls. His vast success made him the most powerful citizen of Rome, while his army gave him loyal and enthusiastic support. In 48 he became a candidate for the consulship, which he desired to hold without giving up his military command. This did not meet the approval of the senate and excited the jealousy of Pompey. However, he crossed the Rubicon, a small stream forming the boundary of his province, and moved upon Rome to make himself master of all Italy. The senate and Pompey fled to Greece. He hastened to Spain to overthrow Pompey's legates, and defeated Pompey's powerful army in Greece, in the famous Battle of Pharsalia in 48 B. C. Pompey fled to Egypt to escape captivity, but was murdered on reaching Africa. The reports of Caesar's victories rapidly spread throughout Rome, and he was made dictator for one year, consul for five, and tribune for life. From Greece he passed into Pontus, Asia, and defeated Pharnaces, sending the news of his victory to the senate in these words: "I came, I saw, I conquered." In 46 he defeated Scipio at Thespius, in the province of Africa, upon which Cato suicided at Utica to escape falling into Caesar's hands.

Caesar was now undisputed master of Rome. He demonstrated his rare tact and ingenuity by instituting many reforms and by displaying great personal magnanimity. The people soon made him dictator for ten years and his victories were celebrated by magnificent games. In 45, after defeating the two sons of Pompey in Spain, he was made imperator for life, and the coins of the realm received an imprint of his portrait, while the month Quintilius was changed to Julius in his honor. His public benefactions include the founding of libraries and the erection of many public buildings. He enlarged the harbor of Ostia, drained the Pontine marshes, corrected the calendar, constructed a canal across the Isthmus of Corinth, and made many other internal improvements.

Caesar refused to accept the crown when it was offered to him at the festival of the Tupercalia, but the aristocracy was led to conspire against his life. While in the senate he was assassinated by twenty-three wounds being inflicted by the daggers of treacherous friends on the ides of March, in 44. His former personal friends, Brutus and Cassius, were among the conspirators, which moved Caesar to exclaim, "Thou, too, Brutus?" Caesar was the most famous statesman and general of his time, and ranked as the greatest orator, next to Cicero. He is classed as a profound scholar and a great historian. The only history from his pen now extant is "Commentaries on the Gallic and Civil Wars."

CAESAREA (sĕs-à-rē'à), the name anciently applied to a number of cities, among them the capital of Cappadocia in Asia Minor, Caesarea Philippi in Palestine, and Caesarea on the coast of Syria, thirteen miles north of Joppa, now called Kaisarieh. The last mentioned city was built by Herod the Great in 22 B. C., and named in memory of Caesar Augustus. It was once a beautiful city, but is now in decay. Saint Paul was imprisoned in it two years. The Crusaders held it and built a cathedral on its site. It is now inhabited by fishermen and has a small harbor.

CAESAREA PHILIPPI, an ancient town of Asia, in Palestine, twenty miles north of the Sea of Galilee. It is mentioned in Matthew xvi., 13, and it was the center of a region given in 20 B. C. to Herod the Great, who constructed a temple of white stone and dedicated it to Emperor Augustus. The place was given to Philip, son of Herod the Great, after the death of the latter, and became known as the Caesarea of Philip. Jesus disclosed his mission on earth to his disciples while at this place. It was named Neronias in honor of Nero, but is now a small village of poor huts known as Banias.

CAESIUM (sē'zĭ-ŭm), an alkaloid metal found in very small quantities in certain minerals and mineral springs. Deposits of it are most abundant on the Isle of Elba, where it occurs in the rare mineral pollux, which contains about thirty-four per cent. of caesium oxide. Chemically it is closely related to potassium and rubidium. Bunsen and Kirchhoff discovered it in 1860 and obtained it as an amalgam with mercury. It absorbs oxygen with great rapidity, has a specific gravity of 1.88, and melts at 80.6°.

CAFFEINE (kăf-fē'ĭn), or **Theine**, the active principle of coffee and tea. It forms tufts of white silky needles. The taste is bitter. It forms double salts with platinum and gold chlorides. Caffeine is contained in coffee in the proportion of from one to four per cent., and in tea from two to four per cent. It is a methyl substitution compound of theobromine, and is used as a stimulant and as a diuretic.

CAGLIARI (käl'yà-rē), a city of Sardinia, capital of a province of the same name, situated on the southern end of the island. It has a good harbor on the Gulf of Cagliari. In the vicinity are extensive salt-producing lagoons. A railway line connects it with the principal cities of Sardinia, and it has steamboat and submarine cabal service with the leading cities of Italy. The university, founded in 1596, has an attendance of 275 students. It is the seat of several consulates, has three theaters, and maintains several fine schools and churches. Shipbuilding, cotton mills, brickyards, and machine shops are among the enterprises. It has a brisk trade in flax, grain, salt, and textiles. The Phoenicians founded the city. Its fine cathedral dates from 1312. Population, 1921, 53,747.

CAGLIARI (kȧl-yä′rē), **Paolo.** See **Veronese, Paul.**

CAGLIOSTRO (kȧl-yôs′trō), **Alessandro,** adventurer, born in Palermo, Italy, June 2, 1743; died Aug. 25, 1795. He studied chemistry and medicine in a monastery, but left this institution and became a Freemason. He traveled extensively and assumed to be a physician and alchemist, visiting nearly all the countries of Europe, and practiced largely by prescribing his "elixir of immortal youth." For some years he resided at Warsaw, where he grew rich and lived in an ostentatious style. In 1785 he became implicated in the affair of the Diamond Necklace and was confined in the Bastile of France, but was liberated the following year. Subsequently he was arrested in Rome on the charge of being a Freemason and was imprisoned for life near Urbino, in the fortress of San Leone. His wife, Lorenza Feliciana, a lady of Venice, accompanied him in his travels and spent the closing years of her life in a convent.

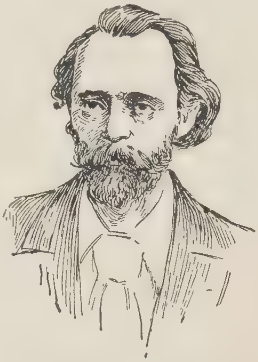
CAHORS (kȧ-ôr′), a town of France, capital of the department of Lot, sixty miles north of Toulouse. It is situated on a rocky peninsula formed by the Lot River. The chief buildings consist of a cathedral, a normal school, a college, and an Episcopal palace, now the prefecture. It has manufactures of textiles and glass, and is the center of considerable trade in merchandise and country produce. It has a fine statue of Gambetta, who was born here. Population, 1922, 12,240.

CAIBARIEN (kī-vä′rē-ȧn), a seaport of Cuba, in the province of Santa Clara, about 100 miles southeast of Cardenas. It has a good harbor and railroad connections with the principal commercial centers of Cuba. The trade is chiefly in rice, tobacco, and merchandise. Profitable sponge fisheries are located off the coast. Population, 1922, 7,213.

CAICOS (kī′kōs), a group of islands at the southeastern extremity of the Bahamas. It includes about thirty small islands, only six of which are inhabited, and the area is 200 square miles. Grand Caicos, the largest island, is six miles wide and twenty miles long. Salt raking and sponge fishing are the chief industries. These products are exported principally to Canada and the United States. The Caicos islands are a British possession, and with the Turk Islands, lying southeast, are politically under the government of Jamaica. Grand Turk is the seat of government. Population, 4,975.

CAIN, the eldest son of Adam and Eve. He is spoken of as a cultivator of the soil. Owing to his sacrifices being less acceptable to God than those of Abel, he slew his brother and became a fugitive and vagabond. He built the city of Enoch in the land of Nod.

CAINE (kān), **Thomas Henry Hall,** novelist, born at Runcorn, England, May 14, 1853. He descended from Manx parents, attended schools in the Isle of Man and Liverpool, and learned the trade of an architect. For a number of years he was engaged as writer on the Liverpool *Mercury*. In 1881 he went to London, where he began a successful literary career. He lived for some time with Dante G. Rossetti, the poet, and after his death, in 1892, made his home in the Isle of Man. He is very prolific as a writer, and many of his productions have been dramatized. In 1895 he came to Canada and the United States to promote interest in the movement for international copyrights. His books include "Recollections of Rossetti," "The Shadow of a Crime," "The Manxman," "The Prodigal Son," "The Eternal City," "The Christian," "The Deemster," "The Scapegoat," and "The Bondman."

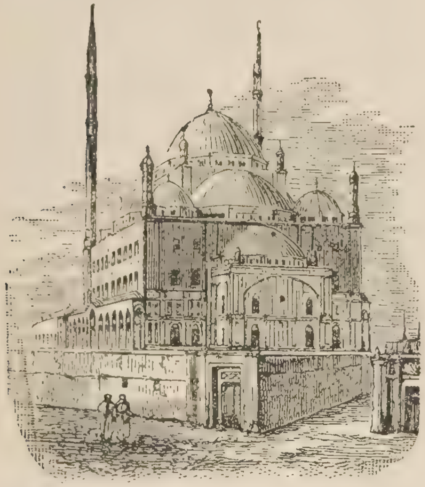

THOMAS H. H. CAINE.

CAIRD (kârd), **Edward,** educator, born at Greenock, Scotland, March 22, 1835. He studied at the universities of Glasgow and Oxford, and in 1866 became professor of moral philosophy at the University of Glasgow. In 1893 he was made master of Balliol College, Oxford, where he did much to build up educational work. His books include "Philosophy of Kant," "Religion and Social Philosophy of Comte," "Evolution of Theology in the Greek Philosophers," "Essays on Literature and Philosophy," and "Evolution of Religion."

CAIRN (kârn), a name given to a heap of stones placed on a grave, or built up as a landmark. Cairns are quite numerous in many places of America, especially on the plains, where they are found on hills, usually marking a group of graves. In Europe the Druids and other primitive peoples built cairns over their graves and, like the American Indians, placed rude weapons, such as stone axes and arrowheads, with the dead bodies. They are met with in many parts of Scotland and Wales. The most remarkable one is near Drogheda, on the Boyne River, which is in the form of a mound nearly eighty feet high.

CAIRO (kā′rō), county seat of Alexander County, Illinois, at the junction of the Mississippi and Ohio rivers, on the Illinois Central, the Mobile and Ohio, and other railroads. It is located on a low tract of land, a part of which was formerly subject to inundations, but extensive levees have been erected that protect against overflows, and the city is increasing rapidly in commerce and wealth. The chief buildings include the county courthouse, a public library, the customhouse, and a United States marine hospital. It has a large trade in grain, coal, lumber, and merchandise. The industries include iron foundries, furniture factories, lumber mills, machine shops, and cotton oil mills, while the surrounding country furnishes a large trade in agricultural products. Charles Dickens described Cairo as *Eden* in his "Martin Chuzzlewit." It was first settled in 1854 and became a city three years later. Population, 1920, 15,203.

CAIRO (kī'rō), the capital of modern Egypt, on the Nile, about ten miles above the delta and 150 miles southeast of Alexandria. Its history is interesting and dates from the year 969 A. D., when it was founded by the Arabs, who brought the bones of their ancestors from Kairon, and reigned over Egypt for ten generations. It was conquered by Saladin from the Fatimite caliphs in 1171, when he became master of Egypt. His descendants ruled until 1517, when the city was stormed and taken by Sultan Selim, after which it was governed by a succession of Mameluke kings. The French took it in 1798 and three years later it was captured by the British, who restored it to the Turks. In 1882 it was occupied by the British and has since been the center of British influence in Northern Africa.



MOSQUE MOHAMMED ALI.

The old portion of the city is divided into a number of quarters, and has tortuous and narrow streets, while the newer part has several modern streets that are platted on a regular plan and improved by modern facilities. The inhabitants consist largely of Moslems, Jews, and Christians, each occupying different quarters of the city. The buildings include some of the finest remains of Arabian architecture, among them about 400 mosques, several of which were built as early as 915 A. D. Among the most important is the great Mosque of Mohammed Ali. Within the city are many tombs of caliphs and mamelukes, some of which are finely built and of large size. Formerly it had many obelisks, but nearly all of them have been transported to European and American cities. The great pyramids and sphinx are about ten miles from the city.

Most of the streets are crowded with Eastern merchants, who display their goods in open stalls and conduct trade largely in bazaars and markets. A number of railroad lines connect the city with Alexandria, Siout, and the Suez Canal, but river navigation is also a factor in maintaining its importance commercially. It is the seat of a university founded in 971, which carries courses that are directed by Moslems. No tuition is charged and the teaching faculties receive no compensation, hence they make their living by doing clerical and other work. It has ample accommodation for 10,000 students.

The narrow streets of Cairo are traversed by camels, human beings, horses, and asses, thus affording a strange contrast when compared to the modern cities of Europe and America. Under European influence a public school system is developing, and many residences and office buildings have been erected. The newer portion has electric street railways, pavements, sewerage and electric lights. The citadel is an interesting point, located on Mokattam Hills, and near it is Saint Joseph's Well, cut in the rock to a depth of 270 feet. The city is a center of interest for travelers and is visited by many tourists. Besides, many thousands of Mohammedans flock there annually to worship or carry on trade. The language spoken is Arabic. The city is the residence of consuls general from France, Germany, Russia, and other European countries, and is the official residence of the Khedive of Egypt. Its name in Arabic is Musr-al-Kahira, meaning the victorious city. Population, 1907, 654,476; in 1921, 791,399.

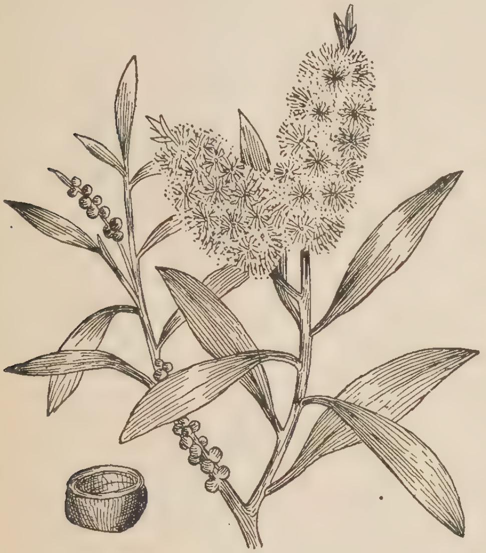
CAISSON (kās'sŏn), in military, a wooden box to hold shells and loose powder, or an ammunition wagon. The term is applied in nautics to a boat gate for closing the entrance to a dry dock, and in engineering to a wooden frame or case sunk in the beds of rivers to keep out the water during the building of piers or foundations for bridges. Caissons of the latter kind are constructed of strong timbers closely and firmly joined together. Among the largest caissons ever constructed was the one used at the New York tower of the Brooklyn bridge across East River. It was 82 feet high, 173 feet long, and 102 feet wide.

CAJEPUT (kăj'ê-pŭt), or **Cajuput**, a kind of tree native to Australia and the East Indies. It grows to a height of thirty feet, has alternate leaves, and bears white flowers on pendulous branches. The leaves yield the valuable product known in pharmacy as oil of cajeput. It is used as a stimulant, and in the treatment of gout, rheumatism, dyspepsia, and toothache. The high price at which pure cajeput oil has been sold has caused it to be adulterated by adding turpentine, oil of rosemary, etc. The trees from which this product is obtained includes a large

(Opp. 482.)

Street Scene in Cairo, Egypt.

number of species, and in Australia they are commonly known as tea trees.



CAJEPUT.

CALABAR BEAN (kăl′ȧ-bär), the seed of an African plant allied to the kidney bean. The bean is poisonous. It is used in medicine chiefly as an external application in rheumatism and neuralgia, and to induce the contraction of the pupil of the eye. In this respect it has the opposite effect of belladonna, which causes the pupil to be dilated. Superstitious tribes of Africa administer it as an ordeal to persons suspected of witchcraft. If the suspect is caused to vomit, innocence is declared; if it purges, or the patient dies, the suspect is declared guilty. The plant has brownish-red or ash-gray leaves.

CALABASH TREE (kăl′ȧ-băsh), the common name applied to an American tree cultivated in the West Indies and other tropical regions. It attains a height of thirty feet, has flowers variegated with red, yellow, and purple, and bears narrow elliptical leaves. Its fruit resembles gourds and is used in making household utensils, such as basins, water bottles, and drinking cups. The pulp of the fruit is used as a purgative, and to some extent as a poultice in treating bruises and inflammations.

CALABRIA, the name given in Roman times to the southeastern peninsula of Italy. The district included within the Calabria of the Romans corresponded nearly to the modern province of Lecce. On the other hand, the modern Calabria is nearly coextensive with the ancient Bruttium. It includes the three provinces of Catanzaro, Cosenza, and Reggio di Calabria. This region is enclosed by the sea on all sides, except the north. It is separated from Sicily by the Strait of Messina and is traversed by highlands which reach an altitude of nearly 4,000 feet. The area is 5,819 square miles. Rice, grain, hemp, flax, fruit, and live stock are the chief products. It has mineral deposits of value, such as rock salt, marble, alum, gypsum, alabaster, and copper. Population, 1917, 1,411,348.

CALAIS (kăl′ĭs), a city and seaport of Washington County, Maine, on the Saint Croix River, twelve miles from Passamaquoddy Bay. It has transportation facilities by the Saint Croix and Penobscot and the Canadian Pacific railroads. The principal industry is shipbuilding. It has machine shops, tanneries, ax factories, iron foundries, and lumber industries. Electric lights, pavements, and waterworks are among the municipal improvements. It is the seat of the Calais Academy, and has a number of excellent church and school buildings. Navigation on the Saint Croix River is open the greater part of the year. It has an abundance of water power for manufacturing purposes and a considerable trade. Population, 1920, 6,084.

CALAIS (kȧ-lā′), a fortified seaport city of France, on the Strait of Dover, in the department of Pas-de-Calais, 150 miles north of Paris. The harbor is deep and has a lighthouse 190 feet high. Among the chief buildings are the Church of Notre Dame, the public library, and the Hôtel the Guise. It has an important commerce in eggs, wine, grain, vegetables, fruits, and other products of the farm and garden. The chief manufactures include cotton, silk, and woolen goods, laces, gloves, fabrics, and machinery. Many boats that visit the cod and herring fisheries of Iceland make their headquarters at Calais. Edward III. of England laid siege to it in 1347 for twelve months, and the latter country held it until 1558, when it was retaken by the Duke of Guise. It was strongly defended by the English and French in 1914, 1915 and 1916 against the Germans. Population, 1922, 67,276.

CALAMANDER WOOD (kăl′ȧ-măn-dẽr), a kind of wood used extensively in making furniture, obtained from a tree similar to the ebony and persimmon trees. It resembles rosewood, takes a fine polish, and exhibits a variety of colors. This wood is so hard that it can be worked only with the best edged tools and is preferred to most varieties as a veneer. The supply is secured largely from Ceylon and southern India.

CALAMIANES (kä-lȧ-mĭ-ä′nĕs), a group of islands belonging to the Philippines, between Palawan and Mindoro, from which it is separated by Mindoro Strait. The surface is hilly, but fruits, tobacco, rice, and sugar cane are produced profitably. Gold and iron deposits abound, but they are not worked to any great extent. The area is 340 square miles. Population, 20,200.

CALAMINE (kăl′ȧ-mīn), a mineral consisting essentially of zinc. The two species were formerly known as carbonate and silicate, but the former is now classed as *smithsonite* and the latter as *calamine*. Pure calamine contains fifty-two per cent. of zinc and is valuable as an ore of that metal. It is found in America and Europe, occurring mostly in small crystals.

CALAMUS (kăl'ȧ-mŭs), the name commonly applied to a genus of palms from which rattan canes are made for caning chairs. These trees hold a place midway between the grasses and the larger palms. They yield material useful in the construction of cables and bridges. The term is also used to designate the aromatic *sweet flag* that is native to the swamps and ponds of temperate zones, which yields essential oils used in perfumes, and to sweet-scented grasses of India valuable in the manufacture of incense.

CALASH (kȧ-lăsh'), or **Caleche,** a carriage with low wheels, fitted with a top or hood, and furnished with seats for four inside. The driver occupies a seat in the front. Some are constructed with a movable front, making it possible to use the vehicle either as an open or a closed carriage. The name is applied in Canada to a cart or carriage with two wheels, fitted with a seat for two passengers, and a single seat for the driver on the dashboard.

CALCITE (kăl'sīt), the carbonate of lime, distinguished from aragonite in that it crystallizes in the hexagonal system. It is a general term used to describe a variety of minerals, such as marble, chalk, and limestone. The colors are usually white or pale shades of gray, but include violet, green, yellow, blue, and red, owing chiefly to the presence of impurities. Iceland spar is a colorless variety found in the basalt rocks in Iceland.

CALCIUM (kăl'sĭ-ŭm), the metal forming the base of lime. Combined with other substances, it is one of the most widely distributed and abundant, but is rarely found in the native state. It was first obtained in the metallic state in 1808 by Sir Humphry Davy, by decomposing the chloride by electricity, also by heating in a closed vessel iodide with sodium, but not in sufficient quantities to determine its properties. Pure calcium is of a pale yellow color and is a ductile and malleable metal. It occurs in nature as a carbonate, silicate, and sulphate, and forms a large constituent of all soils, ashes of plants, limestone, chalk, and marble. It is the main constituent of the mineral matter of the bones of animals, and forms large deposits as fluor spar, limestone, and gypsum. With carbon it forms the compound known as *calcium carbide,* which is used extensively in the manufacture of acetylene.

CALCULATING MACHINE (kăl'kū-lā-tĭng), a machine for making arithmetical calculations with speed and accuracy. Various devices have been made for this purpose, the simplest one being the abacus (q. v.). Leibnitz published the first description of a calculating machine in 1673. The British government employed Charles Babbage to construct a mechanism of this kind in 1821, and, after spending twelve years on the project, completed quite a satisfactory machine. Dorr E. Felt, in 1889, constructed a calculating machine with a keyboard resembling that of a typewriter, on which calculations can be made satisfactorily. By means of it operations in the fundamental principles of arithmetic can be performed, and the square and cube roots can be successfully extracted. The cash registers used in many business houses are a form of the calculating machine.

Calculating machines of a high grade are now in use in nearly all the banks, counting houses, and insurance offices. They have a keyboard like that of a typewriter, but the keys have figures so arranged that they stand in columns from 1 to 9. The figures are impressed upon a strip of paper as the keys are touched. By pressing a special key, it is possible to obtain the results, or addition, subtraction, multiplication, or division. Many complicated patterns are in use. Electricity is used in some styles to perform the operations.

CALCULUS (kăl'kū-lŭs), in mathematics, any branch which may involve or lead to calculation by algebraic symbols. The term is used to embrace the whole science with the exception of pure geometry. The leading divisions of the subject are the differential and integral calculus, which two divisions are included in the infinitesimal calculus. Newton wrote a treatise on the principles of the infinitesimal calculus in 1669, which was published a number of years afterward, and he is sometimes spoken of as the founder of this science of calculation. However, it was first discovered by Leibnitz, who published the discovery before that of Newton became known. The Leibnitz system contains the better method of notation and is now universally used.

CALCUTTA (kăl-kŭt'tȧ), the capital of Bengal and of British India, on the Hugli River, a branch of the Ganges, about eighty miles from the Bay of Bengal. The river is about three-fourths of a mile wide at the city, which extends five miles along the river bank and includes a site equal to ten square miles. Near the city and on the opposite side of the river are a number of suburban towns which are connected with the city by bridges and electric street railway lines. The city was founded in 1686 by the East India Company, with Governor Charnock as principal executive officer. In 1720 three villages were annexed to the possessions of the company by the Emperor of Delhi, which were later fortified and named Fort William in honor of the King of England. In 1707 Calcutta became the capital of the Bengal presidency. It was attacked by Sorajah Dowlah in 1756 and after a siege of two days was surrendered. At that time occurred the tragedy of the Black Hole, in which 146 English prisoners were confined on a hot summer night, and all but twenty-three perished. The city remained in the hands of Dowlah for six months, after which it was retaken by Admiral Watson. It became the seat of the British government of India in 1772

Calcutta is the commercial metropolis of Asia. Its advantages in water navigation are very extensive, including, besides the river, several canals to facilitate trade with the adjacent territory. Railroad lines penetrate from it in all directions toward the north, east, and west, and facilitate a large interior, export, and import trade. Several botanical gardens and public parks beautify the city, while Bishop's College, a well-organized public school system, and several academies offer educational advantages in courses extending from the kindergarten to the university curriculum. It has many fine mosques, cathedrals, and churches, besides substantial government buildings and a university for higher education. In recent years a large number of learned societies have been organized for the study of antiquity, geology, astronomy, literature, history, and other lines of research. A number of daily newspapers, and many weeklies and other periodicals, are published. The hotel service and theater accommodations are modern.

Many of the streets are paved with stone, wooden blocks, and asphalt. Branches of the street railway system extend to all parts of the city. A number of suburban railroad lines are operated to accommodate large numbers of laborers that come from the surrounding country to work in the factories and industries of the city. The manufactured products are extensive, including fabrics, machinery, leather, ironware, furniture, opium, cigars, clothing, and canned fruits. There are exports of cotton, indigo, raw silk, opium, wheat, rice, tea, gunny bags, and live stock. The principal imports include cotton goods, salt, stationery, and wearing apparel. Fort William is a strongly fortified portion of the city, its fortifications costing $10,000,000, and at it are stationed 15,000 men with 600 guns and 80,000 stands of arms. The city has a number of banks and insurance companies and a chamber of commerce. It is the seat of the supreme court of justice and of the court of appeals in the province of Bengal. The customhouse and public mint are among the many governmental buildings. Calcutta is called the "City of Palaces." The inhabitants are mostly Hindus and Mohammedans. Other classes include Jews, Parsees, Negroes, and about 30,000 Europeans. Population, 1915, 1,348,265; in 1921, 1,364,680.

CALDECOTT (ka̤l'dê-kŭt), **Randolph,** artist, born in Chester, England, March 22, 1846; died Feb. 12, 1886. He was a bank clerk at Manchester, but took up the study of art, and in 1872 settled in London, where he made drawings for the leading magazines. In 1882 he was made a member of the Institute of Painters in Water Colors. He illustrated Washington Irving's "Old Christmas" and "Bracebridge Hall," and produced a series of picture books for children. The latter include "John Gilpin," "Eulogy on the Death of a Mad Dog," and "The Great Panjandrum Himself."

CALDERON DE LA BARCA (kăl'dḛr-on), **Pedro,** dramatist, born in Madrid, Spain, Jan. 17, 1600; died May 25, 1681. He was educated at the Jesuits' College, Madrid, and at Salamanca. His first play was written at the age of fourteen years. He wrote about 400 preludes, dramas, and poems. He served with distinction in the wars against Milan and the Netherlands, and was fittingly honored by Philip IV., who was fond of theatrical amusements, and made him superintendent of the court festivals and theaters. Goethe and Schlegel translated his works into German and made them popular in Germanic countries. They abound in a brilliancy of fancy and richness of versification rarely equaled. Among the most noted are "The Physician of His Own Honor," "The Constant Prince," and "Life Is a Dream."

CALEDONIA (kăl-ê-dō'nĭ-ȧ), the name formerly applied to northern Scotland, by which it became known to the Romans. Tacitus gives a description of the defeat of the Caledonians in the year 84 A. D., on the Grampian Hills. The Romans, under Agricola, overran Scotland as far as the firths of Forth and Clyde, but never reduced the country to a Roman province. Caledonia is now the poetical name of Scotland.

CALEDONIA, NEW. See **New Caledonia.**

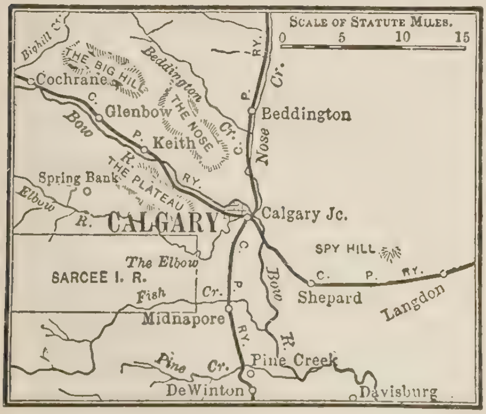
CALEDONIAN CANAL, a canal in Scotland, which connects the North Sea with the Atlantic Ocean. It is made up largely of a chain of natural lakes about sixty miles long, which have been united by artificial canals, thus making a waterway of much importance. The cut is 17 feet deep, 50 feet wide at the bottom, and 120 feet at the surface. It serves to shorten the route, which was formerly 500 miles long, by way of the Hebrides, but the route of the canal from Moray Firth to Loch Linnat is about half that distance. The canal is popular as a route for summer tourists.

CALENDAR (căl'ĕn-dẽr), a register or list by which the year is divided into months, weeks, and days, and showing the various civil and ecclesiastical festivals and holidays. It is so named from the Roman word *calends,* which was the first day of the month. The Egyptians based the year on the changes of the seasons, dividing it into 365 days, and these into twelve months of thirty days each, with five days added at the end of each year. Among the Jews it was customary to reckon twelve lunar months, adding a thirteenth to maintain the recurrence of particular days in consecutive seasons. The Greeks based their lunar months upon the fact that the new moon returned upon the same day of their year in a period of nineteen years. It was found to be about six hours too long and calculators still failed to estimate correctly the beginning of the seasons on the same fixed day of the year.

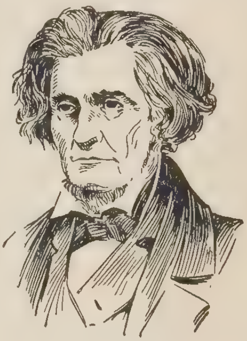
The Romans based their calculations on the year of ten months, including 365 days, which required about eleven days to be supplied at regular intervals. The great Greek astronomer Sosigenes, assisted by Marcus Fabius, at the request of Julius Caesar, devised the *Julian* calendar. In this system the equinox was restored to its proper place by counting two months between November and December, hence the year 707 (46 B. C.) contained fourteen months. The year was computed at 365¼ days; the quarter of a day was added to February as a single day every fourth year. The Julian calendar continued in use until the fall of the empire, and was used by Christians until 1582.

Pope Gregory XIII. abolished the Julian calendar in all Catholic countries and introduced a reformed calendar called the *Gregorian.* Accordingly, ten days were deducted from the year 1582, by which Oct. 5, according to the old calendar, was reckoned Oct. 15, 1582, by the new; and, to prevent displacement recurring, every fourth year was counted a leap year, in which February was assigned twenty-nine days instead of twenty-eight. Under this system, only one in four of the years ending centuries is a leap year; thus, 1700, 1800, 1900 were not leap years; while 2000 will be. The Gregorian year contains 365 days, five hours, forty-nine minutes, and twelve seconds. To distinguish it from the other systems, it was designated the *new style,* and previous calculations became known as the *old style.* The new style was adopted in France, Spain, and Portugal in 1582, and in the Catholic portions of Germany, Switzerland, and the Netherlands in 1583. Poland adopted it in 1586; Hungary in 1587; Holland, Denmark, and Protestant Germany adopted it in 1700; Switzerland in 1701; England in 1752; and Sweden in 1753. Of the Christian countries, Russia retained the old style longest, until 1902.

CALGARY (kăl′gȧ-rĭ), a city of Canada, in the province of Alberta, on the Canadian Pacific and Canadian National railways. It is in a region that is devoted chiefly to cattle and horse ranching, 835 miles west of Winnipeg. The buildings are substantial and are constructed largely of light-gray stone. It has an electric light plant, a city waterworks, a sewer system, and several fine schools and churches. The chief enterprises are soap works, leather making, and railroad shops. It is important as a trade center for merchandise and as a shipping point for cereals and live stock. The refinery erected by the Imperial Oil Company cost $2,500,000 and employs 1,600 people. Calgary was incorporated in 1885. Population, 1921, 63,305.



CALHOUN (kăl-hōōn′), **John Cadwell,** statesman, born in Abbeville, S. C., March 18, 1782; died at Washington, D. C., March 31, 1850. He descended from an Irish family that had settled in South Carolina at an early date. His parents were too poor to provide the means necessary for him to obtain a regular schooling, but he studied under his brother-in-law and became fitted to enter the junior class at Yale. After graduating in 1804, he studied law and began to practice at Abbeville. Being of a meditative disposition, he developed qualities of statesmanship at an early age. He was elected to Congress in 1811, where he became a distinguished leader of the Democratic party by advocating the War of 1812 against England. In 1817 he was appointed by President Monroe to the Department of War, and in 1824 was elected Vice President with John Quincy Adams. Four years later he was elected Vice President with Jackson, but the two prominent leaders of the Democratic party soon became opposed to each other. In 1832 the Legislature of South Carolina passed the famous Nullification Act, which provided "that any State in the Union might annul an act of the Federal government." The states of Virginia, Georgia, and Alabama supported this act and threatened to dissolve the Union.


JOHN C. CALHOUN.

Calhoun, being in sympathy with the Legislature in his own State, resigned the Vice Presidency and was elected to the Senate, where he championed states' rights. He was Secretary of State in Tyler's administration, during which time he concluded a treaty of annexation with the Republic of Texas. He retired from the Cabinet in 1845 and reëntered the Senate, resuming the leadership of the Southern States, and established a reputation with Clay and Webster as a great debater; the three were often referred to as "The great trio." It is commonly thought that in gifts of logic he surpassed both Clay and Webster. He spent many years in writing his work, "Philosophy of Government," in which the doctrine of State sovereignty is vindicated, which was published soon after his death.

CALI (kä′lē), a town of Colombia, in the department of Cauca, near the junction of the

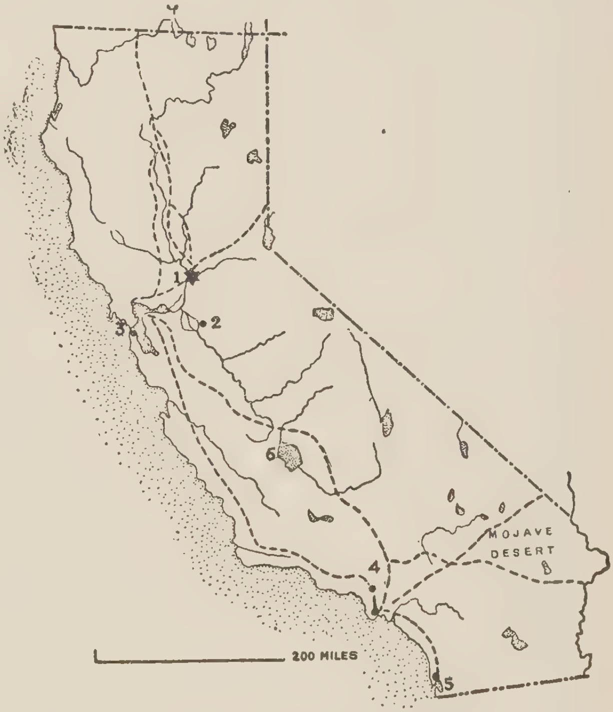
Cali and Cauca rivers. It occupies a fine site on a tableland about 3,150 feet above sea level, and has a brisk trade in grain and fruit. Transportation is furnished by a railway which connects it with Buenaventura, on Chocó Bay. The chief buildings include a college, the post office, and the Church of San Francisco. It was founded in 1556. Population, 15,800.

CALICO (kăl'ĭ-kō), the general name of cotton cloths having colored patterns printed on them. Calicoes are coarser than muslin, and in Europe they include shirting and common white cotton cloth. Calico printing was first practiced in India and is used to some extent in stamping woolen, silk, and linen goods, but it is employed principally in stamping the cloth known in the market as calico. The process was brought to Germany and France by the Dutch, and later to England by a Protestant refugee who left France in 1696. Calico prints are now among the most staple articles of manufacture. The printing was first done by wooden blocks, on which the patterns were engraved. At the present time most of the printing is done by large machinery and cylinder presses, in which the colors are put on rollers and passed over the cotton cloth. There are as many rollers as colors to be printed, each roller containing a separate color, and each one filling its own place in the pattern.

Formerly as many impressions were made in printing as the number of colors that were required in completing the pattern, but by employing a number of rollers and the cylinder process all colors are printed by passing the cotton cloth through the press but one time. Each of the rollers is supplied with figures of the pattern raised above the surface of the roller, by means of which the dye colors or steam colors are fixed to the cloth in a becoming way. In printing the cloth passes through the machine, thence over a hot-air chamber, which dries the cloth. It is then steamed and washed and, after being starched and pressed, it is put in bales ready for the market. The colors used in printing are variously made of animal, vegetable, and mineral compounds, depending upon the class of prints to which they are to be applied. In the newer process of calico printing, which has largely supplanted all others, it is possible to combine printing and dyeing. Cloth on which the colors are merely stamped is apt to fade easily, and by the use of the newer process it is possible to obtain colors that will not fade, known in the market as *fast colors*. This process employs mordants to a large extent.

CALICUT (kăl'ĭ-kŭt), a city of India, in the Malabar district, 565 miles southeast of Bombay. It is important as a seaport and railroad center, and has a large trade in spices, cotton goods, lumber, and machinery. The manufactures include calico, utensils, cigars, clothing, and betel nuts. Calico cloth received its name from Calicut, where it was manufactured extensively at an early date. The Portuguese visited the city in 1486, when Pedro da Covilham landed here, and Vasco da Gama reached the city on his tour after doubling the Cape of Good Hope. Population, 1922, 78,530.

CALIFORNIA (kăl-ĭ-fôr'nĭ-à), a State of the United States, on the Pacific coast, popularly known as the Golden State. It is bounded on the north by Oregon, east by Nevada and Arizona, south by Mexico, and west by the Pacific Ocean. The distance from north to south, measured through the center, is 750 miles, and the average width is 200 miles. The eastern boundary conforms quite nearly to the curve of the sea coast. The western shore is washed by the Pacific Ocean, from which the Bay of Monterey and the Bay of San Francisco are the principal inlets. Point Conception, Point Arena, and Cape Mendocino are the principal capes; the last named is the most western point in the United States proper. California has a coast line of 1,200 miles. The area is 158,360 square miles.



1, Sacramento; 2, Stockton; 3, San Francisco; 4, Los Angeles; 5, San Diego; 6, Lake Tulare. Chief railroads are shown by dotted lines.

Description. Along the shore is a fertile coast plain, east of which, almost parallel to the coast, trend the Coast Range Mountains, and in the eastern part are the high elevations of the Sierra Nevada. Between the two great mountain ranges are the beautiful Sacramento Valley and the San Joaquin Valley, in which flow, respectively, the Sacramento and San Joaquin rivers, uniting near San Francisco Bay, with which their waters intermingle. Among the lofty peaks of the Sierra Nevada are Mounts Brewer, Tindall, Lyell, Dana, and Whitney, Merced Peak, Gray Peak, Pyramid Peak, Sonora Mountain, Stanislas Peak, and many others reaching heights of from 10,000 to 15,000 feet above the sea. Mount Whitney is the culminating peak, having an altitude of 14,868 feet. The Coast Range is less elevated, ranging from 5,600 feet to 9,214 feet, which is the altitude of Mount Pinos. Mounts Eddy, Scott, and China are elevated peaks of this system, which is connected by ranges of the Cascades, to which belong Mount Shasta, elevated 14,380 feet. The mountains abound in thermal and cold mineral springs with recognized medicinal virtues. They are utilized extensively for health and pleasure resorts. Between the mountain ranges are numerous scenic canyons and valleys, the most beautiful of the latter being the Yosemite and Hetch-Hetchy.

Rivers and Lakes. Besides the Sacramento and San Joaquin, which drain the great interior plain, formed of the Sacramento and the San Joaquin valleys, California has many rivers valuable for drainage and irrigation. The Salinas River drains the region lying west of the Coast Range, flowing into Monterey Bay, and in the northern part is the Klamath, which receives the drainage from the Trinity River and flows into the Pacific near Requa. The Kings is a tributary of the San Joaquin and the Kern, Eel, and Owens are other streams of importance. Many beautiful lakes are located in different sections of the State, including lakes Tulare and Owens, in the central part; lakes Mono and Tahoe, near the eastern boundary; and lakes Honey, Eagle, and Middle, in the northern part. On the line between Oregon and California are Goose, Rhett, and Klamath lakes.

Climate. The valleys of California have a delightful climate, and in most of these the year is divided into the wet and dry seasons. Rain falls chiefly from the middle of November till the early part of May, but of course is not continuous, and the average for the State is twenty-three inches, which is less than at Chicago or Montreal. The principal valleys and the seacoast may be said to have sufficient rainfall, while many portions are adapted to irrigation by drawing water from the lakes and streams. Its great diversity of climate is due to the proximity to the sea and a vast difference in altitude of many localities. The greater part of the State has a very favorable climate, possessing all the elements essential to the growth of vegetation and the enjoyment of life. In some sections are desert regions from which the rainfall is almost entirely shut off by lofty mountains. The largest of these is the Mojave Desert in the south central part. The warm winds, influenced by the Japan Current, affect the coast region favorably, and here flowers bloom the entire year. Snow is almost unknown at San Francisco, where the average mean temperature is 49° in winter and 60° in summer. The plateaus have a temperate climate, while the mountains, especially the western slopes, have considerable snow.

Flora and Fauna. Between the tropical climate of the Pacific coast and the cold of the elevated mountain peaks is a range of climate as great as that found between the tropics and the Arctic region, hence the plants are greatly diversified. All the forest trees are of great size. The redwood thrives along the coast from San Francisco Bay to the Oregon boundary, and east of the Coast Ranges are forests of fir and several species of conifers, especially the sugar and yellow pines. South of San Francisco Bay the coast plain is covered with grasses, though small groves of trees abound along the streams and among the hills. The oak is found in the northern part and in the Sierra Nevada are forests of sugar pine, cedar, cypress, and other woods, including the giant sequoia, ranging from thirty to thirty-four feet in diameter and reaching heights of 350 feet. These are the largest and oldest trees in the world. The State was formerly the home of many wild animals and still has quite a number of mammals, including the wolf, bear, lynx, puma, bighorn, deer, and beaver. Many species of birds abound, such as the quail, vulture, cuckoo, and woodpecker. Rattlesnakes, lizards, and turtles are among the reptiles. The fisheries of the inland waters and off the coast are important, especially those of the cod, herring, salmon, smelt, and trout.

Minerals. Productive gold mines are worked in about thirty counties, and the State held first rank in the output of that mineral until 1897, when it was surpassed by Colorado. Formerly mining was confined to the river channels, and sluices were introduced as early as 1851, but now it is carried on by the most improved machinery, and the annual output averages about $18,500,000. Most of the gold is obtained from the quartz and is produced extensively in Kern, Nevada, Trinity, Calaveras, Eldorado, and Sierra counties. Silver ore is not found in mines producing that metal exclusively, but is obtained in considerable quantities with other mineral products. The State ranks fourth in the production of copper, which is mined chiefly in Shasta County. Other minerals include quicksilver, petroleum, bituminous coal, gas, borax, manganese, and salt. Asphalt is found in large quantities and building stone is abundant.

Agriculture. Interest in agriculture has been growing with rapid strides, due chiefly to an increase in population and the construction of extensive irrigation canals. The farms are quite large, averaging nearly 400 acres, but there is a constant tendency toward increasing the smaller holdings, chiefly because the profit in careful husbandry is very marked, especially in fruit growing. South of the Tehachapi Mountains, where fruit culture has developed into an important enterprise, irrigation is depended upon very largely. The State has about 350,000 acres devoted to the culture of grapes, and the crop is used in making preserves and for raisins. In the production of beet-root sugar the State takes first rank. Wheat is the most important cereal and is grown extensively in the central valley, and steam machinery is utilized extensively in tilling the soil and harvesting the crops. Barley, oats, alfalfa, rye, and corn are grown more or less extensively, and all kinds of vegetables yield abundantly. Prunes, lemons, oranges, almonds, walnuts, and peaches are grown. All the domestic animals common to the United States thrive, and dairying and poultry raising receive a large share of attention. Truck gardening is an important enterprise in the vicinity of Los Angeles and San Francisco.

MANUFACTURING. Few states have better prospects in the line of manufacturing than California, being favored by an abundance of timber and minerals. Gas and petroleum are factors in developing this enterprise, and the power of mountain streams is utilized in propelling mills and electrical machinery. San Francisco has extensive shipyards, where some of the largest seagoing vessels and warships are constructed. In sugar refining it takes first rank, and its output of canned fruit and lumber is extensive. Other manufactures embrace railway cars, flour, cured meat, molasses, leather, clothing, and machinery.

TRANSPORTATION. The Sacramento River is navigable from its mouth to Red Bluff and the Colorado, which forms a part of the western boundary, is important as a highway for commerce the entire course along the border. Few waters are more important than the Bay of San Francisco, which is a busy water commercially, and furnishes good harbors for San Francisco, Oakland, Martinez, and other centers of commerce. San Diego, Eureka, San Pedro, and other points on the coast have a large shipping trade. Electric railways are abundant in the cities and many interurban points, and few states are more favorably situated in respect to railroad transportation. Important lines cross the State in many directions, connecting the chief business centers with each other and with the cities of all parts of the country. The electric lines have 3,120 miles and the steam lines 8,750 miles.

GOVERNMENT. The State is governed under a constitution which was ratified by a popular vote and became operated in 1879. By its terms the chief executive authority is vested in the governor, lieutenant-governor, controller, attorney-general, treasurer, surveyor-general, and secretary of State, each elected for a term of four years. The Senate consists of forty and the General Assembly of eighty members, the former being elected for four and the latter for two years. Meetings of the Legislature are held biennially, beginning the first Monday of January of even years. The supreme court consists of a chief justice and six associates, elected for twelve years. It is divided into two departments and holds sessions either separately or as one court. A superior court is maintained in each county, elected for six years, and inferior courts are established by the Legislature. Local government is in the hands of municipal, township, and county corporations. The right of suffrage is extended to all persons of both sexes who can read the constitution and write their own names, with the requirement that they have resided in the voting precinct thirty days, in the county ninety days, and in the State one year, but Chinese are not permitted to vote.

EDUCATION. The educational institutions of California are organized on a satisfactory basis and are liberally supported by taxation and public appropriations. A State superintendent of public instruction is at the head of the educational system. District schools are maintained in all the populated rural districts of the State. The towns and cities have graded and high schools, and ample provision has been made for State support to colleges, normal schools, and universities. The State has five normal schools for the training of teachers, and additional facilities are supplied by a number of private institutions. At Berkeley is located the University of California, which is aided by the government, and the Leland Stanford, Jr., University is at Palo Alto, and ranks as one of the leading centers of education in the United States. Lick Observatory, an adjunct of the State university, is located on Mount Hamilton.

The State maintains prisons at Folsom and San Quentin, a home for the feeble-minded at Glen Ellen, a State reform school at Whittier, and a number of orphan asylums. Asylums for the insane are located at Agnew, Napa, Stockton, and Ukiah; the institution for the deaf, dumb, and blind is at Berkeley; and the Preston School of Industry is at Ione City. All of the leading scientific, religious, and educational societies are well organized. Encouragement is given to libraries in the municipalities and the public schools, and the State maintains a fine library with about 100,000 volumes at Sacramento.

INHABITANTS. In population California holds the eighth rank among the states. It is the most populous of the states in the far west. Fully one-fourth of the people are of foreign birth, including chiefly Germans, Irish, and

English. It has 45,700 Chinese and 10,150 Japanese. Sacramento, the capital, is located on the Sacramento River. Los Angeles, on the Los Angeles River, is the largest city of California and of the Pacific coast. Other cities of importance include San Francisco, Oakland, San José, San Diego, Stockton, Alameda, Berkeley, Fresno, Santa Rosa, Pasadena, and Eureka. Population, 1920, 3,426,536.

HISTORY. The region now included in the State was first visited by Spaniards in 1534, and the Gulf of California is thought to have been surveyed by Cortez two years later. Sir Francis Drake cruised along the coast in 1578. The first settlement was made at San Diego in 1796 by Spanish priests, who established mission stations with the view of converting the Indians to Christianity. California belonged to Mexico during the early period of American history and with it became independent of Spain in 1822. After the Mexican War it was ceded to the United States along with other territory, and was admitted to the Union as a State in 1850. The first great rush of immigrants came to California in 1848, following the discovery of large gold deposits, and the State was soon settled by gold seekers and adventurers. In early history a spirit of lawlessness prevailed, which was eventually overcome by the establishment of societies and the building of cities. It is now one of the richest and most productive states.

CALIFORNIA, Gulf of, an inlet from the Pacific Ocean, between Mexico and the peninsula of Lower California. It is from forty to one hundred miles wide and 700 miles long. It abounds in fish and is rich in oysters and pearly products. The principal rivers that flow into it are the Colorado, Altar, Miguel, and Yaqui. Among the chief seaports are La Paz, Guaymas, and, near its entrance, Mazatlan. Point Eugenia is an important cape on its western shore, north of which is Sebastian Vizcaino Bay.

CALIFORNIA, Lower, a territory of Mexico, located south of California, between the Pacific Ocean and the Gulf of California. It has an area of 58,785 square miles. The surface is mountainous, reaching its greatest elevations along the eastern coast and on the peninsula south of Sebastian Vizcaino Bay. The mountains are exceedingly rich in the mineral deposits that are common to California, but mining is yet in a primitive state. Most of the coast lands and valleys are fertile, in which are fine farms and productive orchards and vineyards. A large portion has a dry climate, but the greater part of the territory contains nutritious grasses for pasturage. Pearl fishing and whaling are profitable industries. A number of extensive colonies from the United States are building up various industries. La Paz is the capital. Other towns include Saint Felipe, Saint Lucas, and Saint Quintin. The population is 42,590, a large per cent. of which are Indians.

CALIFORNIA, University of, an educational institution at Berkeley, Cal., founded as a State university in 1868. It was organized as a college of agriculture under an act of Congress passed in 1862 and the College of California was united with it. At first it was located at Oakland and it was removed to its present site in 1873. A tax of two per cent. is collected for its support on the assessed valuation of the State, and it receives special State appropriations, government aid, and the benefit of certain endowments, including the income of large gifts by Mrs. Phoebe A. Hearst.

This institution has an astronomical department on Mount Hamilton, in Santa Clara County, which includes the Lick Observatory. It contains the departments of social sciences, natural sciences, agriculture, mining, commerce, mechanics, chemistry, civil engineering, and the college of letters, at Berkeley; and the Hastings College of Law, Mark Hopkins Institute of Art, medical department, dental department, post-graduate medical department, and California College of Pharmacy, at San Francisco. In addition to these is the department of anthropology, which pursues linguistic and ethnological investigations and gives attention primarily to research of antiquities in Peru, Egypt, and North America. The faculty of instructors and professors consists of 1,290, the attendance is about 22,600, and the library has 520,000 volumes. Admission is free to residents of the State, while nonresidents pay a nominal tuition fee. The endowments aggregate $8,500,000, its total income is $7,150,000, and the value of the buildings and grounds is $9,650,000. M. Emile Bénard, of France, laid out the plans, which provide for buildings and improvements that require an ultimate expenditure of about $10,000,000.

CALIGULA (kȧ-lĭg′ū-lȧ), **Caesar Augustus Germanicus,** third Roman emperor, son of Germanicus and Agrippina, born in 12 A. D. He was brought up among soldiers in his father's camp, and was nicknamed Caligula on account of the soldier's shoes he wore in youth. On the death of his brother, Drusus, he became augur, and after the death of Tiberius, in 37, he was appointed heir. Soon after he was made emperor by the people and the senate. The beginning of his reign was marked by kindness and generosity, granting pardons even to enemies of his own family. After a period of sickness he appears to have lost his mind and become savage, inhuman, and addicted to lust. He found delight in banishing and murdering his friends and relatives, filled Rome with vice and execution, and confiscated the estates of his victims. He built a bridge over the bay between Baiae and Puteoli that he might vie with Xerxes in crossing the sea. Among the remarkable things which he practiced was to stable his horse in a palace, where it was fed with gilded oats, and afterward he raised this animal to the college of priests and later to the consulship. He declared himself a god and erected temples in which sacrifices were offered to himself. He taxed his subjects and robbed and plundered until a conspiracy was raised against him, which resulted in his assassination in 41 A. D.

CALIPH (kā'lĭf), a title of office assumed by the successors of Mohammed in temporal and spiritual power. From this name the early governments of Islam came to be known as the *Caliphate.* This title of office was assumed by three large divisions of Mohammedans. These included the Oriental, established at Medina in 632, which was afterward removed under the Ommyiades to Damascus and finally to Bagdad under the Abbassides; the caliphs of Cordova, founded by Abu al Rahman in 756; and the caliphs of Egypt, or the Fatimites, founded by Obeidallah in 909. With the Turkish conquest in the 16th century, the title was assumed by the Sultan, who retains it to the present time. Emir and Shah are other titles peculiar to the Mohammedan countries.

CALISTHENICS (kăl-ĭs-thĕn'ĭks), the exercise of the body and limbs to promote health and grace, including the lighter forms of gymnastics, especially for girls. American colleges for girls contain departments in which members of the classes are trained by instructors. The results have been found wholesome, not only in increasing physical strength, but mental vigor. Calisthenics is now a department of all the larger colleges of America where females are admitted.

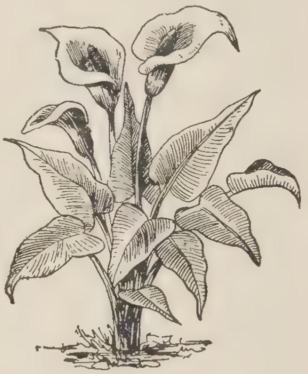
CALIXTINES (kȧ-lĭks'tīnz), the name given to the followers of Georg Calixtus, a Lutheran theologian of the 17th century. The same name refers to a sect of Hussites in Bohemia, who were so called from *calix,* the Latin word meaning cup, owing to their belief that communicants should partake of both the wine and bread in the Lord's Supper.

CALIXTUS (kä-lĭks'to͞os), the name of three popes who ruled in the period between 217 and 1458. The history of Calixtus I. is obscure, but he is assigned to the bishopric of Rome in 217-223. Calixtus II. succeeded Glasius II. in 1119, and died in 1124. Calixtus III. occupied the papal chair from 1455 to 1458. He was advanced in years and feeble. His chief object was to suppress the Turks in a crusade led by the Christian princes, but he failed for want of support. See **Pope.**

CALIXTUS, Georg, theologian, born at Meelby, Germany, Dec. 14, 1586; died March 19, 1656. He received a thorough education at Jena, Heidelberg, and other universities, and became acquainted with the most learned scholars of his time. In 1613 he was made professor of theology at Helmstadt, and in 1645 attended the conference of Thorn, where he had been sent by the elector of Brandenburg. He taught the doctrine of transubstantiation and embraced the philosophy of Aristotle.

CALKING (ka̤k'ĭng), the process of driving a quantity of tarred oakum into the seams between the planks of ships, in order to render the joints water-tight. The oakum is drawn out and laid over the seams, and is then driven by a wedge-shaped instrument called the calking-iron. When sufficient oakum is forced into the seams, it is covered with melted pitch to prevent water from getting to it. Calking is employed in making water-tight the edges of both wooden planks and iron plates, and in the latter the calking-tool straddles the seam or is driven under the lap of one of the plates, depending upon the construction of the ship.

CALLA (kăl'lȧ), a plant native to the temperate regions of most continents, found usually in the northern section in swamps and marshes. The leaves are heart-shaped, the rootstalk is creeping, and the fruit is a small red berry. It has a spreading spathe, and the oblong spadix is covered entirely with flowers. This plant is found in the northern part of Europe and North America, and the root yields a starch used as food. The beautiful calla lily, known in South Africa as the Ethiopian lily, extensively cultivated for its fine flowers, is sometimes classed with the calla, though it is a different plant.



CALLA LILY.

CALLAO (kȧl-lä'ō), a city of Peru, of which it is the principal seaport. It is situated on Callao Bay, seven miles west of Lima, and is the capital of the province of Callao. The harbor is safe and spacious, and the island of San Lorenzo furnishes a natural breakwater. It has connections with the interior by several railroads, is well fortified, and carries a brisk export and import trade. The manufactures consist chiefly of ironware, clothing, leather, and sugar. Some of the streets in the older part are narrow and poorly improved, but those in the newer part are broad and cross each other at right angles. The customhouse and several schools and churches are among the chief buildings. Callao is an old city, dating from the early part of the seventeenth century. It was destroyed several times by earthquakes and was a Spanish city until 1826. The fleet of Chile captured it in 1890. **Population, 1928, 61,340.**

CALLES, Plutarco. See Mexico

CALLIOPE (kăl-lī'ō-pē̇), in mythology, the chief of the Muses, daughter of Jupiter and Mnemosyne (Memory), who presided over eloquence and heroic poetry. She was the mother of Orpheus. The name calliope is now applied to a musical instrument consisting of a series of steam whistles, toned to the notes of the scale, and played by keys like those of an organ.

CALMS, Region of, the parts of the Pacific and Atlantic oceans which are subject to total absence of winds for long periods of time. They are found between the region of trade winds and that of the variable winds. In the North they are known as the Calms of Cancer, and in the South as Calms of Capricorn. During former times, when navigation was carried on wholly by sail boats, these regions were dreaded by seamen as much as the regions of storms, for the reason that ships would lie at rest for several weeks, often exhausting food and water before sufficient movement of the air enabled sailing. With the introduction of large steamboats the former difficulties have been overcome. It is common for violent storms to follow calms that occur unexpectedly. See **Wind.**

CALOMEL (kăl'ō̇-mĕl), a compound of mercury and chlorine, known to chemists as mercury subchloride. It is insoluble in water and is blackened by ammonia. A preparation of calomel is used extensively in medicine for liver complaints, as a vermifuge, and as a purgative. It should be taken with precaution, as it is likely to produce salivation. The calomel of the market is a white powder.

CALORIMETER (kăl-ō̇-rĭm'ē̇-tẽr), an instrument for measuring the amount of heat in bodies. The measurement of heat is divided into *thermometry* and *calorimetry,* the former having reference to the measurements of differences of temperature, and the latter to the quantity of heat which disappears when work is done, or develops when energy is expended. These instruments are known as water, ice, and steam calorimeters. In water calorimeters, a known mass of water is used to determine the amount of heat developed or expended; in ice calorimeters, the heat of fusion of ice is the basis of measurement; and in steam calorimeters, some liquid, usually water, furnishes the heat of evaporation to determine the quantity. Electro-calorimeters are used to measure the heat generated in an electric circuit.

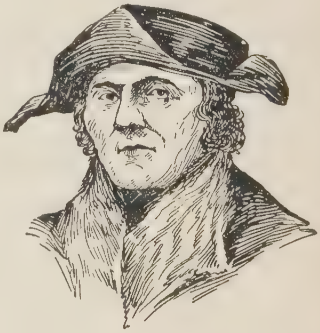
CALUMET (kăl'ū̇-mĕt), a kind of pipe used for smoking tobacco by the North American Indians. The bowl is generally made of stone and the large stem is ornamented with feathers. It serves as the emblem of peace and hospitality. The acceptance of it is the sign of friendship and peace, and the refusal of it is the proclamation of war and enmity. It is offered to strangers as a signal of friendship.

CALUMET CITY. See **West Hammond.**

CALVARY (kăl'vȧ-rȳ̆), the name applied to the small eminence on the north side of Jerusalem on which Christ was crucified. It is the Latin translation of the Hebrew word *Golgotha,* meaning a skull. In Catholic countries the term is applied to the vicinity of a chapel, erected on a hill near the city as a place of devotion in memory of the Savior. It is common to decorate these places with three crosses, symbolic of Christ and the two thieves, and sometimes other figures are added to represent those who took part in the crucifixion.

CALVÉ (kȧl-vā̇'), **Emma,** vocalist, born in Madrid, Spain, in 1866. Her father was a Spaniard and her mother was French. She was brought up in a convent in southern France, having lost her father while she was a child. Later she was instructed by Signora Marchesi and became known in 1882 by splendid successes in "Faust" at Brussels. Subsequently she toured in Europe and America, visiting both Canada and the United States in 1893 and since. Her greatest successes were made as a soprano in David's "Lalla Rookh," Widor's "Maître Ambrose," and Samara's "Flora Mirabilis."

CALVERT (kăl'vẽrt), **Cecil,** second Lord Baltimore, born in 1603; died 1676. He succeeded his father as Lord Baltimore in 1632 and became the real founder of the colony of Maryland. See **Baltimore, Lord.**



JOHN CALVIN.

CALVIN (kăl'vĭn), **John,** eminent reformer of the 16th century, born at Noyon, in Picardy, France, July 10, 1509; died in Geneva, Switzerland, May 27, 1564. He was one of six children, two daughters and four sons. His education was liberal and was obtained amid circumstances of ease. He studied in the noble family of De Mommor and went with the children of that family to Paris, where he studied in the College de la Marche, and was noted for proficiency in languages. Later he studied law at Orleans, where he became acquainted with the Scriptures while associated with his relative, Pierre Robert Olivetan, who was translating them. He was soon converted to the reform doctrines and went to Bourges. While here he acquired a knowledge of Latin under the instruction of a learned German, Melchior Wolmar, and began to preach.

He went to Paris in 1533, after the death of his father. Here he became the center of a new learning and was assisted by the Queen of Navarre, sister of Francis I. The king soon became personally interested in a movement against the Protestants, and Calvin fled to Basel, where he prepared the first edition of "The Institutes of the Christian Religion." It contains as a preface his famous address to Francis I. In 1536 he made a short visit to Italy and proceeded to his native home, where he sold his estate and set out in company with his younger brother and sister for Strassburg. Owing to the hostility of Charles V., he went by the way of Geneva.

Soon after reaching Geneva he met William Farel, then actively promoting the Reformation in that part of Europe, who induced him to remain at Geneva and assist in his work. At Geneva Calvin drew up a Protestant confession of faith, which was adopted by the Council of Two Hundred and was made binding upon the citizens. His work was not without opposition. Finally he was expelled by the Libertine party, which consisted of a party that advocated a liberal policy, and he proceeded to Strassburg. Here he became acquainted with Sebastian Castellio, with whom he formed a warm friendship. The two coöperated in the study of the New Testament, and, when Calvin was recalled to Geneva, Castellio accompanied him and gave support in spreading the Protestant doctrines.

Calvin witnessed the firm establishment of his rules at Geneva, but they were attacked numerous times by various eminent opponents. The most strenuous opposition was made by Michael Servetus, and later by Bolsec, who attacked the doctrine of predestination taught by Calvin. Servetus was condemned for heresy by a council and was executed by burning. The manuscript of the book he had written as an argument against the Trinity was burned with him. The execution was at least in part due to the influence of Calvin, but it is certain that he tried to have the mode of death changed to decapitation. After this event and the expulsion of the Libertine party, his power was supreme at Geneva. Calvin was stern in spirit and had an unyielding will. When necessary to further his ends he became arbitrary, and yet his ambition was attended by heroism and beneficence. He was in accord with the Lutherans up to 1561, when he rejected the tenth article of the Confession of Augsburg, and his followers became known as Calvinists. Among his writings are commentaries on nearly all the books of the Old and New Testaments.

CALVINISM, the system of thought named from John Calvin. The prominent tenets of Calvanism were presented by the Remonstrance at the Synod of Dort in five points, embracing the doctrines of the Original Sin, Total Depravity, Election or Predestination, Effectual Calling, and Final Preseverance of Faith. The doctrines of Calvin stand in contradistinction to those of the Lutheran and Anglican churches. The Westminster Confession of Faith is the most formal expression of the doctrines of Calvanism that exists. It is the standard of the Presbyterian churches, some holding to all the articles and others supporting them in a modified degree. A number of the branches have shown a tendency to Unitarianism, but this confession still stands as one of the most powerful creeds of the Reformation.

CALYCANTHUS (kăl-ĭ-kăn'thŭs), a genus of shrubs native to Asia and America. They have opposite leaves and purple flowers, and both the bark and leaves have an aromatic fragrance. Some species are cultivated in gardens for their flowers and foliage. The genus includes about six species, four of which are native to the United States. The bark is known as Florida allspice, or Carolina allspice.

CALYPSO (kȧ-lĭp'sô), a nymph mentioned in Homer's writings as the daughter of the Titan Atlas, who dwelt in the wooded island of Ogygia. Ulysses or Odysseus was thrown upon the island by shipwreck. He was accorded kind treatment amid the splashing of the fountains, that gave a delicious sense of coolness to the air, and was welcomed by the songs of birds while the ground was carpeted with violets and mosses. Calypso offered him eternal youth if he would consent to remain with her forever. His heart burned yearningly toward his wife Penelope and his youngest son, and he entreated the gods to permit him to revisit his home. After seven years Zeus was moved to command her to allow Odysseus to depart. Calypso wove the sails and was bidden farewell, but afterward died of grief.

CALYX (kā'lĭks), the name applied in botany to the outermost covering of a flower, consisting of an envelope that incloses and supports the whorl of leaves known as the corolla. The leaves of the calyx are called sepals, and are either united at the margins or are separate from each other. The sepals are less delicate than the corolla and are of a greenish color. In some flowers the calyx is united with the corolla and is difficult to distinguish, when the whole is called perianth. It usually falls off after flowering, but in some plants, as in the poppy, it remains until the fruit is ripe, while in others it becomes fleshy and forms the fruit, as in the rose and apple.

CAM (kăm), a contrivance for changing motion in machinery, usually consisting of a small turning or sliding piece or of a projecting part of a wheel. The shape of its face or periphery is such that it imparts or receives variable or intermittent motion by coming in contact with a rod or lever, or is in the form of a projection of some moving piece of machinery so shaped that it gives alternate motion to another piece against which it acts. Many forms of cams and cam-wheels are employed for various purposes in machinery.

CAMBAY (kăm-bā'), a city, gulf, and district at the northwestern point of the peninsula of Hindustan. The district is a feudatory state of British India and is under the Bombay presidency. It has an area of 352 square miles and a population of 91,500. The city was formerly the chief seat of commerce. It is situated at the head of the Gulf of Cambay, and now contains a population of 34,160. The gulf is 25 miles wide and 85 miles long, separating the peninsula of Kathiawar from the northern coast of Bombay.

CAMBODIA (kăm-bō′dĭ-å), or **Camboja,** a province of French Indo-China. It has an area of 37,400 square miles. The soil is fertile, producing coffee, pepper, sugar cane, cotton, indigo, rice, tobacco, betel, maize, and tropical fruits. Gold and precious stones are the chief minerals. It contains a number of beautiful lakes in which fish abound and has extensive marshes infested by crocodiles. The district is watered by a number of streams, contains evidences of ancient prosperity, and constitutes a valuable and productive region. It has been a French protectorate since 1863, though it is ruled by a native king. In 1887 it was united with Tonquin and Anam into a customs union, the three constituting a district under the direction of the supreme council of Indo-China. Railroads, canals, highways, and public schools have been established since French occupation. Kampot, on the Gulf of Siam, is the seaport, and Pnum Penh, on the Mekong, is the principal city. The inhabitants consist chiefly of native races. Population, 1921, 1,503,500.

CAMBON (kän-bôn′), **Jules Martin,** statesman and diplomat, born in Paris, France, in 1845. He studied law in Paris and served through the Franco-German War of 1870-71, and was made an official in the new republic. In 1874 he became director general in Algeria, where he held several important official positions until 1891, when he was made governor general of that country. Soon after he became the French ambassador to the United States, serving from 1891 until 1902. He negotiated the preliminaries of peace at the close of the war between Spain and the United States.

CAMBRAI (kŏn-brå′), or **Cambry,** a city of France, in the department of the Nord, 45 miles north of Saint Quentin. It is nicely situated on the Scheldt River, has extensive railroad conveniences, and is a center of trade. The manufactures include soap, leather, sugar, and machinery. The cathedral contains the remains of Fénelon, who was Archbishop of Cambrai. It was the seat of an important conference in 1508, when the League of Cambrai was organized, which included the Emperor of Germany, the Pope, and the kings of Spain and France, and its object was to disrupt the republic of Venice. It was the scene of several hard-fought battles during the Great European War, especially in 1918. Population, 1921, 23,510.

CAMBRIAN (kăm′brĭ-a̤n), in geology, a division of time, the earliest in which fossils of plant and animal remains are now distinguishable. The Cambrian Period was so named from Cambria, in Wales, where the system of rocks belonging to this age or time were first examined and studied. It is closely associated with the Silurian Period, which some writers regard more recent, and the rocks of this system are immediately below those of the Silurian. They contain fossils of crustaceans, corals, sponges, hydrozoans, starfishes, gastropods, brachiopods, and cephalopods. In Newfoundland the thickness of this system is about 6,000 feet, whence it thickens toward the south and west, being about 7,000 feet in New York and 10,000 feet in British Columbia.

CAMBRIC (kām′brĭk), a very fine fabric of linen, named from Cambrai, France, where it was first made. Switzerland is now the leading center of manufactures of this article, and it is made extensively in Flanders and other countries. The name *cambric* is now applied to a fabric made of cotton in imitation of the linen product, such as Scotch cambric, which is a muslin made by twisting the cotton fibers very hard.

CAMBRIDGE (kām′brĭj), a city of Massachusetts, capital of Middlesex Co., separated from Boston by the Charles River. It is entered by the Boston and Maine and the Boston and Albany railroads, and has connection with Boston and other cities by electric railways. Cambridge is a suburb of Boston and the seat of the celebrated Harvard University. It includes Old Cambridge, North Cambridge, East Cambridge, and Cambridgeport. The university is located in Old Cambridge. Its beautiful campus is adorned by magnificent buildings, and its numerous excellent trees are among the most interesting of many noted objects of the city. The famous Wadsworth House, built in 1726, is located on the east end of Harvard Square, and is noted as the residence of the presidents of Harvard College for more than 125 years. A marble slab located where formerly stood the Washington Elm, surrounded by an iron fence, contains the inscription: "Under this tree Washington first took command of the American army, July 3, 1775." Cambridgeport is located between Old Cambridge and the West Boston bridge, and is noted for its factories, while North Cambridge is the most important commercial center of the city. East Cambridge is the newer portion and contains the county buildings.

The manufactures of Cambridge include machinery, steam boilers, packed meat, clothing, musical instruments and steam engines. It has a number of iron foundries and book publishing houses. The municipal utilities include waterworks, stone and macadam paving, and an extensive sewer system. Cambridge was settled by Governor Winthrop and other men of the Colonial Period in 1630. At first it was known as New Town, but the name was changed to Cambridge in 1683. The Americans occupied it at the time Boston was held by the British, in 1775-76. It was chartered as a city in 1846. Population, 1905, 97,426; in 1925, 120,053.

CAMBRIDGE, a city of Maryland, county seat of Dorchester County, 60 miles southeast of Baltimore. It is on the Choptank River and on the Pennsylvania Railroad. The surrounding country is agricultural, producing fruit and cereals, and it is a brisk market for merchandise and produce. Among the chief industries are oyster canneries, flouring mills, and factories producing clothing and machinery. The first settlement was made on its site in 1684 and it was incorporated as a colonial town, but its present charter dates from 1900. Population, 1900, 5,747; in 1920, 7,467.

CAMBRIDGE, a city in Ohio, county seat of Guernsey County, 58 miles north of Marietta, on the Pennsylvania and the Baltimore and Ohio railroads. It has a public library, a county courthouse, and a municipal system of waterworks. In the surrounding region are deposits of coal, gas, and petroleum. The manufactured products include pottery, machinery, glass, ironware, and utensils. It was settled in 1806 and became an incorporated town in 1837. Population, 1900, 8,241; in 1920, 13,104.

CAMBRIDGE, a town of England, in Cambridge County, 48 miles north of London. It is supported mainly by the great university that bears its name. Trumpington Street, its principal thoroughfare, is lined on both sides by many fine buildings. Besides the University of Cambridge, it has a public library and the Church of the Holy Sepulcher. It has a considerable jobbing trade, modern municipal improvements, and a number of manufacturing interests. The surrounding country is fertile and produces large quantities of cereals and fruits. Cambridge was known as *Camboritum* by the Romans. It was chartered by King John in 1200. Population, 1921, 35,275.

CAMBRIDGE, University of, one of the two great institutions maintained in England for many centuries, located at Cambridge, on the Cam River, 48 miles north of London. It was founded at the beginning of the 12th century, tradition fixing the time at 1129. The entire university comprises twenty different corporate bodies, called colleges, founded in the following order: Saint Peter's College, 1257; Clare College, 1326; Pembroke College, 1347; Gonville and Caius College, 1348; Trinity Hall, 1350; Corpus Christi College, 1351; King's College, 1441; Queen's College, 1448; Saint Catherine's College, 1473; Jesus College, 1496; Christ's College, 1505; Saint John's College, 1511; Magdalene College, 1519; Trinity College, 1546; Emmanuel College, 1584; Sidney Sussex College, 1598; Downing College, 1800; Cavendish College, 1876; Selwyn College, 1882; and Ayerst Hall, 1884.

Each of the colleges has a special governing body as well as teachers and students, but all are subject to the laws of the university as a whole. The university is governed by a senate, which is constituted of all the doctors and masters, but the electoral right is limited to those who reside in Cambridge. This body governs through the council of the senate, which is constituted of the chancellor, vice chancellor, four heads of colleges, four university professors, and eight associates. The ordinary administration of the university is exercised by the chancellor, the high steward, and the vice chancellor, the last mentioned being the head of some college. The discipline of the students is superintended by two proctors. Women are admitted to the examinations after having filled the commissions of standing and residences, but no degrees are conferred upon them, their names being published and certificates are issued. Girton and Newnham are two colleges that have been established for women, but they form no part of the university, though students of these colleges are admitted to many of the university lectures.

The university has an annual income of about $300,000, which arises from fees at matriculation, for degrees, and from various other sources. There are about 3,000 undergraduates, 45 professors in the various departments, and over 400 fellowships. A beautiful botanical garden, an observatory, and an anatomical school are maintained to further study and for pleasure. The libraries contain over 200,000 volumes and include more than 10,000 manuscripts, while the laboratories for study and the museums are among the best in England. The branches studied cover all the arts and sciences, both ancient and modern. Among the eminent men who studied at Cambridge are Byron, Pitt, Chaucer, Bacon, Newton, Spencer, Ben Jonson, and Milton. Two members of Parliament are sent from the university, who receive their election by the votes of the members of the senate. See **Oxford, University of.**

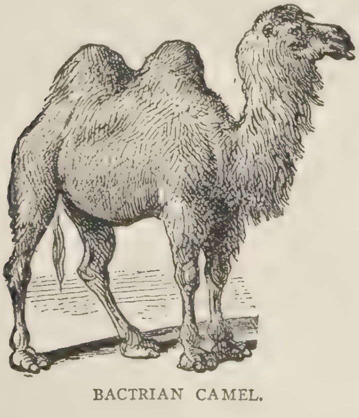
CAMBYSES (kăm-bī'sēz), son of Cyrus the Great, whom he succeeded in 529 B. C. as the second King of the Medes and Persians. He invaded Egypt in the fourth year of his reign and made himself master of that country in six months. He planned to make further conquest, but the Syrians refused to aid him against the Carthaginians. The army he sent to take possession of the temple of Jupiter Ammon perished in the desert, and one commanded by himself was compelled to retreat for want of provisions. Later he became addicted to drink and perpetrated cruelties in Egypt. He not only murdered his brother Smerdis, but also one of his sisters and his wife. He was recalled from Egypt by a revolt. While on his way to Persia he was accidentally wounded and died in 521 B. C.

CAMDEN (kăm'den), a city in New Jersey, county seat of Camden County, on the Delaware River, opposite Philadelphia, with which it is connected by the Camden Suspension Bridge. It is on the Pennsylvania, the West Jersey and Seashore, and other railroads. The industries include foundries, boot and shoe factories, machine shops, shipyards, and railroad works. There are no less than eight shipyards in the city, with dry docks and marine railways. Among the principal buildings are the West Jersey Orphanage, the Wilson Building, the county courthouse, the Hotel Walt Whitman, and many schools and churches. The city has a Carnegie library and a fine Federal building. It has an excellent street railway service and electric and gas lighting, and is the center of a good jobbing trade. It was first settled in 1773 by Jacob Cooper and was incorporated in 1828. Population, 1905, 83,363; in 1920, 116,309.

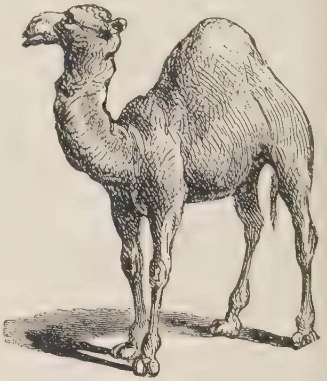
CAMDEN, a city of South Carolina, county seat of Kershaw County, 32 miles northeast of Columbia. It is located on the Wateree River, which is utilized for navigation, and is on the Southern and the Seaboard Air Line railroads. The manufactures embrace cotton and woolen goods, brick, and machinery. It is popular as a winter resort, having a pleasant and healthful climate. It has a monument erected to the memory of De Kalb in 1825, when Lafayette laid the corner stone.

Camden is noted on account of two battles fought here in the Revolutionary War. The first took place on Aug. 16, 1780, when Lord Cornwallis with a force of 2,000 British defeated 3,000 Americans under Gen. Gates. In this engagement Baron De Kalb was mortally wounded. The second Battle of Camden took place on April 25, 1781, between a force of 950 British under Lord Rawdon and 1,400 Americans under Gen. Greene, in which the Americans were repulsed and fled in confusion. In the Civil War, while on the famous march to the sea, Gen. Sherman, on Feb. 25, 1865, entered Camden and destroyed many buildings and about 2,000 bales of cotton. Population, 1900, 2,441; in 1920, 3,930.

CAMEL (kăm'el), a large cud-chewing animal found native in Asia and Africa. The two species are known as the Arabian camel and the Bactrian camel. They belong to the ruminant quadrupeds, and are known by their long and arched neck, absence of horns, possession of incisive, canine, and molar teeth, upper lip fissure, and one or two humps on the back. These animals are native to an extent of country from Morocco to China. The dromedary, a species of fleet camel, has a single hump or protuberance and is found in a zone nearly 2,000 miles wide. The common, or Arabian, camel, has one hump and is found from Turkestan to China. The Bactrian camel is larger and more powerful, and is taken as the best beast for service. Owing to its great utility in desert regions it is often referred to as the ship of the desert.

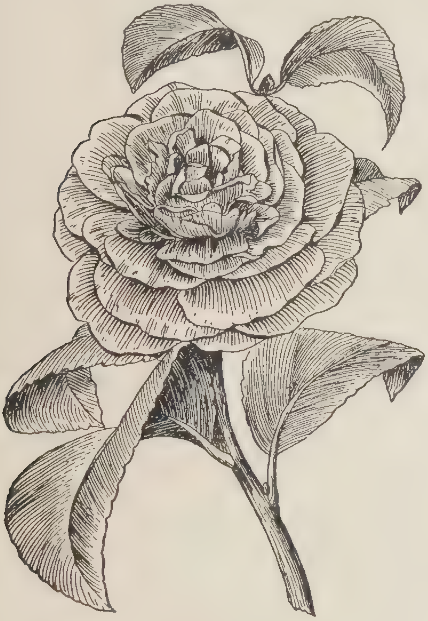

BACTRIAN CAMEL.

The camel travels from three to five days without drinking and with a small quantity of food. It is capable of carrying from 700 to 1,000 pounds 25 miles a day, while those trained for speed often travel from 60 to 100 miles a day. Its power to endure thirst is due chiefly to the structure of its stomach, which is capable of draining off and storing water for future use by means of little pouches or water cells. The food is of the coarsest kind and consists of grasses, shrubs, twigs, and nettles. In a domestic state it subsists on the same general classes of foods as are fed to horses and cattle. Though appearing quite curved, the backbone is almost straight, the apparent curvature being due to its humps. These consist of accumulations of nutritious fat which is stored for future use. The owner of a camel carefully examines the humps before starting on a long journey. When they are plump and in a good condition, the animal possesses accumulated means of support and is able to endure long journeys and much exertion.


ARABIAN CAMEL.

The camel lives from 30 to 50 years. It is not as intelligent as the horse or elephant, and is quite vindictive when injured. Its milk is a nutritious and common food of its owner, while its flesh is highly esteemed. The hide of the camel is useful in manufactures, and the hairs serve a valuable purpose in making carpets and wearing apparel. Its nostrils and eyelashes are fitted to endure the sand storms of the desert. The sense of smell and sight are well developed. At night and when resting it chews its cud much like cattle and sheep. The llama and alpaca of South America belong to the same genus, but have no humps. The camel is used very extensively in Eurasia, Africa, and parts of South America, and has been introduced in Australia. It is one of the most valuable animals.

CAMELLIA (kȧ-mĕl'lĭ-ȧ), a genus of hardy evergreen shrubs or trees native to Asia, so named from G. J. Kamel, a German missionary in the Philippines. It includes many species, of which a large number are cultivated as greenhouse shrubs. The popular camellia has beautiful, double flowers, and was originated from the camellia of China and Japan. Under cultivation it has developed red, yellow, white, and variegated colors, which differ somewhat in the form and position of the petals. These plants flower profusely in different seasons of the year, and thrive best in cool houses. They may be propagated by layers or cuttings, and the single camellia is grown largely by planting the seed or by grafting. These plants are closely related to the tea-plant.



CAMELLIA.

CAMELOPARD (kȧ-mĕl′ō-pärd), the name sometimes applied to the giraffe, because it is formed like a camel and spotted like a pard. See **Giraffe.**

CAMEO (kăm′ē-ō), the general name given to gems cut in relief, in distinction from those hollowed out like a seal. The stones used have two or more different colored layers. The art of cutting is designed to show a layer of color with another color as a background, or an alternation of colors. In stones containing more than two colors one or more are cut so as to form ornamental wreaths or figures, as cups, flowers, or vases. Cameo cutting is of great antiquity. It was practiced by the Babylonians and from them passed down to all succeeding peoples. Some very fine specimens have been found in the ruins of Egypt and ancient Greece. Among the most celebrated cameos is the Gonzaga at Saint Petersburg, which is thought to represent Ptolemy I. and Eurydice. In the Marlborough collection of England is the "Cupid and Psyche," made by Tryphon, who lived in Macedon about the time of Alexander. Glass cameos are manufactured. The art of cutting cameos from shells of mollusks has long yielded excellent specimens.

CAMERA LUCIDA (kăm′ē-rȧ lū′sĭ-dȧ), an instrument invented by Dr. Wollaston about 1804, designed to facilitate sketching objects from nature by producing upon paper a reflected picture of them. The instrument contains a glass prism of such a form that its base has the general angles of 90°, 67½°, 135°, and 67½°. The objects, placed in a horizontal direction at the proper distance from one of the planes inclosing the right angles, convey rays, which in their passage through the prism are twice totally reflected, and finally, reaching the observer's eye, placed near one of the acute angles and, looking downward, enable it to see the object of which it is in quest, on a surface placed in proper focus beneath. This camera is usually called the "clear chamber" and has undergone a number of modifications, particularly in the improvement made by the addition of a glass prism, which enables the operator to observe both the figure and the point of the pencil at the same moment and greatly facilitates in sketching the objects. The camera is portable and may be carried to different points with facility.

CAMERA OBSCURA (ŏb-skū′rȧ), an optical instrument by which the distant image of an object is thrown on a sheet of paper for convenience in sketching or for the purpose of viewing distant scenery. It was invented by Friar Bacon in the 13th century, but has been largely modified and improved. The simple form consists of a chamber from which light is everywhere excluded except at an opening about an inch in diameter, through which rays of light cast the image of the object on the opposite wall or screen. The form used for sketching usually consists of a tent surrounded by opaque curtains, at the top of which a mirror is placed in an inclined position. The light from a distant object is reflected from the mirror to the lens of a revolving lantern placed at the top of the tent, and behind it is a mirror at a slope of 45°, which transmits the image of the object to a sheet of paper placed at a suitable distance below.

Photographers employ the camera obscura, the form consisting of a box with two slides arranged to fit into each other, to one of which a tube is attached, containing an object glass at its extreme end. The camera is focused by sliding the two parts of the box and by means of moving the tube with a pinion. The image of the object is thrown on a ground glass slide in the back of the box. When the image has been focused to its clearest and sharpest point, a sensitive plate is exposed, which receives and retains an impression of it. In recent years the kodak, an instrument constructed on this plan, has come into general use for outdoor photography. See **Photography.**

CAMERON (kăm′ēr-ŭn), **James Donald,** statesman, born in Middletown, Pa., May 14,

1833. He graduated at Princeton and entered the Middletown bank, of which he was successively clerk, cashier, and president. He was president of the Northern Central Railway Company of Pennsylvania from 1863 to 1874. President Grant appointed him Secretary of War in 1876, and the following year he was elected to the United States Senate to succeed his father, Simon Cameron. He was reëlected from time to time, serving until 1897. He died Aug. 30, 1918.

CAMERON, Simon, statesman, born in Lancaster, Pa., March 8, 1799; died June 26, 1889. At the age of nine years he learned the printers' trade. He published a newspaper in Boylestown, Pa., beginning in 1820. He became adjutant general of the State and was elected to the United States Senate as a Democrat in 1845. He joined the newly organized Republican party in 1856 and was returned to the Senate. President Lincoln appointed him Secretary of War, and throughout his administration he was a supporter of the movement to arm the fugitive slaves. He was sent to Russia as minister in 1862, but resigned in the fall, and four years later was returned to the United States Senate, to which position he was elected a third and fourth time, but resigned in 1877 in favor of his son. He was called "The Czar of Pennsylvania Politics."

CAMERON, Verney Lovett, distinguished African explorer, born near Weymouth, England, in 1844; died March 26, 1894. In 1857 he joined the British navy and served with distinction in the Mediterranean, in the West Indies, on the Red Sea, and on the east coast of Africa. He was appointed to command an expedition in 1872 to relieve Livingstone, and in August met Livingstone's followers bearing his remains to the coast.

CAMEROON. See **Kamerun.**

CAMOUFLAGE (kȧ-mōō'flȧg), a term that came into use in 1917, during the Great European War, signifying the employment of methods to cover, conceal or protect against detection or observation. Those who sought to attack unobserved, or who planned to mislead the enemy, were said to make use of camouflage.

CAMILLUS (kȧ-mĭl'lŭs), **Marcus Furius,** Roman statesman, died in 403 B. C. The place and date of his birth are unknown, but it is certain that he began a military career at an early age. He was chosen dictator in 396, at the time of the Veientine War, and captured the city of Veii by mining under its walls. For this victory he demanded a part of the spoils and became unpopular because of his pride, which caused him to retire to Ardea, but when the Gauls captured Rome, in 390 B. C., he was recalled and made dictator a second time. He rebuilt Rome and won victories over the Gauls and the Volsci. During his public career he was made dictator five times, the last appointment coming to him in 367 B. C., at a time when the Gauls invaded Rome. He defeated the invading army near Alba Longa, and subsequently erected a temple and made substantial improvements in Rome.

CAMOËNS (kăm'ô-ĕns), or **Camoes, Luis de,** eminent poet, born in Lisbon, Portugal, in 1524; died in 1579. His education was secured at the University of Coimbra, where he studied advanced branches and ancient classics. He began to write poetry at an early age, and fell in love with a lady of honor, which was the beginning of his misfortunes, his marriage being forbidden by his father. He enlisted in the fleet which sailed from Portugal against Morocco, but was banished in 1556 on account of a satire written by him touching the life led by the ruling Portuguese. While in banishment at Macao, he wrote the earlier cantos of his great poem, "Lusiabs." He returned to his native country in 1570 and two years later the "Lusiads" was published. This work is his greatest, containing ten cantos, and is regarded the national epic poem of the Portuguese.

CAMOMILE. See **Chamomile.**

CAMPAGNA DI ROMA (câm-păn'yȧ dê rō'mȧ), the name applied to the plain surrounding Rome, which nearly coincides with the ancient province of Latium. It embraces the coast region of central Italy, a tract of country about 100 miles long and 30 to 40 miles wide. The northeastern part, lying on the slopes of the Apennines, is pleasant and healthful, but the lowlands are affected by malaria. Within the district are included the Pontine Marshes, formed by a number of small streams, which, having no outlet to the sea, spread over the land. The land is volcanic and a number of lakes, including Albano and Regillus, occupy the craters of volcanoes. It is certain that the plain was dry as late as 312 B. C., when the region was cultivated and the Appian Way was extended over a portion of it. The acqueducts of ancient Rome stretched across it, but the lines are now destroyed and only broken arches remain. The modern towns included in this region are Ostia, Frascati, Tivoli, and Palestrina.

CAMPANIA (kȧm-păn'yȧ), a portion of ancient Italy, lying southeast of Latium, from which it was separated by the Liris River. The region was popular among the ancient Romans on account of its equable climate and great fertility. The scenery and soft sea breezes made it a favorite place for the residence of the wealthy, who erected villas of great splendor and employed slaves to cultivate the soil. Among the lakes, most of which fill the craters of extinct volcanoes, are Avernus, the fabled entrance to the lower world. Within it stands Mount Vesuvius, near which are the buried cities of Pompeii and Herculaneum. Capua, founded by the Etruscans; Cumae, the oldest Greek settlement in Italy, and Baiae, the famous watering place of the ancient Romans, are among the noted cities. The Romans called it Felix in song and oratory, from its scenery and fertility, and it is still the *Campagna Felice* of Naples.

CAMPANINI (käm-pȧ-nē′nē), **Italo,** tenor, born in Parma, Italy, in 1846; died Nov. 23, 1896. He was the son of a blacksmith and entered the army of Garibaldi, serving about two years. After the close of the war he returned to the forge, but took lessons in voice culture and studied at the Parma Conservatory. His first appearance was as the *Notary* in "La Sonnambula," and subsequently he sang with much success at Milan in "Faust." He was with the Nilsson Company in America in 1873, and subsequently made a number of tours through Canada and the United States. His voice had a large compass, but became impaired from an affection of the throat.

CAMPANULA (kăm-păn′ū-lȧ), a genus of plants found widely distributed, including nearly 300 species. The plants are mostly herbaceous and many are cultivated. The flowers are greatly variegated, including blue, white, and violet, and are favored for bordering beds. The *Bellflower* is a common species in America, growing profusely in the temperate climates, and the *Canterbury bells* is a species common to Europe. The *harebell* is indigenous in Canada, the United States, and Great Britain.

CAMPBELL (kăm′el), **Alexander,** eminent divine, born at Shane's Castle, Ireland, Sept, 12, 1788; died in Bethany, W. Va., March 4, 1866. His education was obtained principally at Glasgow University. He came to America in 1809 and engaged as pastor of a Presbyterian Church in Washington County, Pennsylvania. Becoming dissatisfied with Calvinism, he and his father, also a noted minister, organized a church at Brushrun, Pa., taking the Bible as the creed. In 1827 he organized the denomination now called *Disciples of Christ,* or *Christians,* though formerly called *Campbellites.* The denomination has many adherents in the United States and a large following in other countries. Campbell is the author of sixty volumes of writings, among them "Christian Baptism," "Christian System," "Lectures on the Pentateuch," and "Living Oracles." He founded the *Christian Baptist* in 1823. In 1840 he established Bethany College, of which he was the first president, holding this office until his death.

CAMPBELL, Sir Alexander, statesman, born in Yorkshire, England, in 1822; died May 22, 1892. He came to Canada at an early age and was admitted to the bar in 1843. In 1856 he became queen's counsel and was a member of the legislative council of Canada. In 1867 he was made Postmaster General and later Minister of the Interior. He was leader of the government party in the Senate, became Minister of Justice in 1881, and was made Postmaster General a second time in 1885. Beginning with 1887, he served as Lieutenant Governor of Ontario.

CAMPBELL, Bartley, dramatist, born in Allegheny, Pa., Aug. 12, 1843; died in Middletown, N. Y., July 30, 1888. After studying law, he became a newspaper reporter. In 1868 he founded the *Evening Mail* at Pittsburg, and later the *Southern Magazine* at New Orleans. Among his best known plays are "The White Slave," "Through Fire," "The Virginian," "On the Rhine," and "The Big Bonanza." The last named netted $16,000 in a month at a theater in San Francisco. He also wrote many other productions and attained to marked popularity as a writer, but lost his mind on account of excessive work.

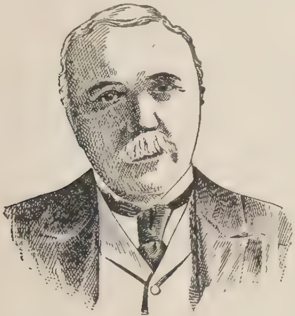
CAMPBELL, Beatrice Stella Tanner, actress, born in London, England, in 1867. In 1884 she married Patrick Campbell, who lost his life in the Boer War of 1900, after which she devoted her energies to secure training for the professional stage. Her first appearance was at the Alexandra Theater in Liverpool, and subsequently she played at the Adelphi, London, and other theaters. Her reputation was greatly widened in 1893 at the Saint James Theater, where she played successfully in "Second Mrs. Tanqueray" and "The Masqueraders." She visited Canada and the United States a number of times, and presented her best known rôles in the principal cities. As a Shakespearean player she attained much success.

CAMPBELL, John Archibald, jurist, born in Washington, Ga., June 24, 1811; died March 12, 1889. He studied at the University of Georgia, was admitted to the bar, and established a successful practice at Montgomery, Ala. In 1853 he was appointed by President Pierce an associate justice of the United States Supreme Court, but resigned in 1861 to become assistant secretary of war in the Confederate States. He was imprisoned at Fort Pulaski after the close of the war, and, subsequent to discharge, again practiced law in Alabama.

CAMPBELL, Thomas, poet, born in Glasgow, Scotland, July 27, 1777; died in Bologna, Italy, June 15, 1844. He was a student at the University of Glasgow and became distinguished as a scholar of Greek literature. He traveled extensively, witnessed the Battle of Hohenlinden, and visited many places of note to gather inspiration for his work. His writings are considered among the best in English classics. Though his lyrics are very fine, he ranks higher as a writer of songs. Among his best known productions are "The Pleasures of Hope," "Theodoric and Other Poems," "Hohenlinden," "The Last Man," "Gertrude of Wyoming," "Ye Mariners of England," and "The Battle of the Baltic." His remains were interred at Westminster Abbey, in the Poet's Corner.

CAMPBELL, William Wilfred, poet, born in Berlin, Canada, June 1, 1861; died Jan. 1, 1918. He studied at Toronto and at Cambridge, Mass., and took a course in theology for the Church of England, but decided to enter the civil service of Canada. In the meantime he gave much attention to literary work, and contributed verses and poetical dramas to a number of American and English periodicals. In 1900 he was president of the English section of the Royal Society of Canada.

CAMPBELL-BANNERMAN, Henry, statesman, born at Stracathro, Forfarshire, Scotland, Sept. 7, 1836; died April 22, 1908. He was the youngest son of James Campbell and received his additional surname under the will of a maternal uncle, Henry Bannerman of Kent. He graduated at Cambridge and received a degree from the University of Glasgow. After holding various county offices, he succeeded William Harcourt as leader of the Liberal party. He became Prime Minister and First Lord of the Treasury in 1905, as successor to Arthur James Balfour (q. v.).



H. CAMPBELL-BANNERMAN.

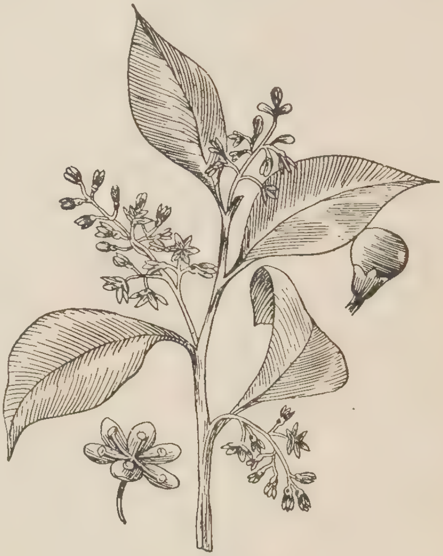
CAMPECHE (kȧm-pā̇'chā̇), or **Campeachy,** a seaport of Mexico, on a bay of the same name, in the northern part of Yucatan, at the mouth of the San Francisco River. The chief buildings include a college and a cathedral. It is connected by railways with interior points and has a considerable foreign trade. Population, 1922, 17,248.

CAMPECHE, Gulf of, the name of the southern part of the Gulf of Mexico, situated south of north latitude 21°. It is bounded by the three Mexican states of Campeche on the east, Tabasco on the south, and Vera Cruz on the west.

CAMPFIRE GIRLS OF AMERICA, an organization founded by Dr. Luther Gulick, in 1912, to promote the outdoor life and social improvement of girls, as well as to contribute to the joy of living. The girls in most cases are organized in groups of twenty, each group constituting a campfire, and each group is placed in charge of a guardian at least eighteen years of age. All are encouraged to pursue knowledge, seek beauty, cultivate health, glorify work, give service, and be happy. Ceremonial meetings are held monthly, besides one week in camp annually. In 1929 the membership included 185,000 girls, divided into about 9,000 groups, and branches were maintained in eighteen countries.

CAMPHINE (kăm-fēn'), a purified oil of turpentine obtained by distillation over quicklime, or by rectifying it over dry chloride of lime. It forms camphor when united with oxygen. It was formerly used in lamps for lighting, but, owing to its explosive gases, it has been superseded for that purpose by kerosene or refined petroleum.

CAMPHOR (kăm'fẽr), a translucent substance obtained by distilling with water the leaves and wood of the camphor tree. It is whitish in color, difficult to powder, has a peculiar odor, and is slightly soluble in water. In alcohol, ether, and strong acetic acid it is highly soluble. It is used to preserve clothing, textiles, and books from ravages of insects. In medicine it is one of the most useful substances, being prescribed for many ailments, such as fever, hysteria, epilepsy, and whooping cough. If taken in large doses it lowers the pulse, enfeebles the circulation, and even causes death. It is used both externally and internally. To animals and plants of the lowest forms it is a poison. Camphor is made in large quantities in Borneo, Japan, and China. The roots and wood of the tree are cut in small pieces before distillation is attempted. The best camphor is made from a natural exudation of the camphor tree which abounds in Borneo.



CAMPHOR: FLOWER AND FRUIT.

CAMPOBELLO (kăm-pō̇-bĕl'lō̇), an island of Canada, belonging to New Brunswick, near the mouth of the Passamaquoddy Bay, an extension from the Bay of Fundy. It is about ten miles long and three miles wide, and has a well-wooded interior. The minerals include lead and copper, but fishing is the chief industry. At the northern extremity is a lighthouse 60 feet high. The island is popular as a summer resort, being nicely improved with walks and drives, and the permanent population is about 1,200.

CAMPOFORMIO (käm-pō̇-fôr'mē̇-ō̇), a village in northern Italy, in the province of Udine, 65 miles northeast of Venice. It is celebrated for a conference held here on Oct. 17, 1797, between representatives of France and Austria. By the terms of the treaty concluded, Austria received Istria and Dalmatia. Lombardy was made a part of the Cisalpine Republic, and

France received Venice and the Belgian Netherlands.

CAMPO SANTO, meaning holy field, the Italian name of a burying ground. However, it is usually applied only to the burial grounds that are richly adorned and surrounded with arcades. Pisa contains the most remarkable campo santo. It was established in the 12th century, and walls richly frescoed were constructed around it in the 14th century. Genoa also has one of remarkable beauty.

CAMPUS MARTIUS, one of the most famous public parks of ancient Rome. It was located outside the walls of Rome, and was inclosed between the Capitoline, Quirinal, and Pincian Hills, and the Tiber River. The park was set apart for military purposes. It was sacred to the god Mars, and was one of the most noted meeting places for the people. In it were several crystal lakes and baths and it contained botanical gardens, theaters, and a race course. It now serves as a part of the site of modern Rome.

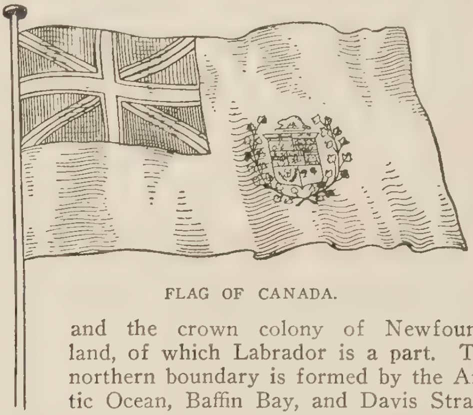
CAMUS (kȧ-mü′), **Armand Gaston,** public man, born in Paris, France, April 2, 1740; died Sept. 2, 1804. His careful training in ecclesiastical law caused him to be elected advocate general of the French clergy, and as such he was zealous as a Jansenist. He published the "Red-Book," in which he gave a record of the expenditure of the court and showed the extravagance practiced in public life. In 1793 he was commissioned to capture Dumouriez and others charged with treason, but was himself made a prisoner and taken to Austria, and after about two years was exchanged for the daughter of Louis XVI. He was elected to the Council of the Five Hundred on his return to Paris and was president of that body in 1796, and subsequently devoted his attention to law literature.

CAMWOOD (kăm′wo͝od), or **Barwood,** a kind of wood used in making a brilliant red color, which, however, is not a permanent red. When prepared with the sulphate of iron, it yields the red color of the bandanna handkerchiefs. The red obtained from this wood is richer than that produced by Brazil wood.

CANA (kā′nȧ), an ancient village of Galilee, about six miles north of Nazareth, the scene of the first miracle of Jesus mentioned in John ii. It is called Cana-el-Jelil by the natives. Another village of the same name was located about three miles north of Nazareth, which some regard as the scene of the miracle mentioned.

CANAAN (kā′nan), meaning low land, a portion of the promised land of the Israelites, located between the Mediterranean and the Shur and Syrian deserts, bordering on the Jordan River. It was so named from Canaan, the youngest son of Ham (Gen. ix., 18), and was occupied by the tribe which descended from him.

The Canaanites were a heathen people, and at the time of the invasion of the Israelites were divided into the four nations known as the Hivites, Hittites, Amorites, and Jebusites. It is probable that the different branches were mixed more or less with immigrants from other countries. They used the Babylonian language in diplomacy, and like the Phoenicians engaged largely in commercial pursuits. Their cities were protected by walls and fortresses, and more recent research has demonstrated that they were dependents of Egypt in 1400 B. C. They worshiped Baal and Astrate. After the Israelitish invasion, they were gradually conquered, and in the reign of Solomon all paid tribute to that king.



FLAG OF CANADA.

CANADA (kăn′ȧ-dȧ), **Dominion of,** the region which includes all of North America north of the United States, except Alaska and the crown colony of Newfoundland, of which Labrador is a part. The northern boundary is formed by the Arctic Ocean, Baffin Bay, and Davis Strait; eastern, by the Atlantic Ocean, Labrador, and Newfoundland; southern, by the United States; and western, by Alaska and the Pacific Ocean. North of the mainland is the great Arctic Archipelago, containing many islands of considerable size, among them Prince Albert Land, Baffin Land, Prince of Wales Island, Southampton Island, and Melville Island, and on the west are Vancouver Island and the Queen Charlotte Islands. The most prominent coast indentations are Hudson Bay, on the north, and the Gulf of Saint Lawrence, on the east. In extent it is the largest country of North America, being larger than the United States and almost as large as the whole of Continental Europe. The greatest length from east to west is 2,700 miles and from north to south, 1,600 miles. The area is 3,745,574 square miles, of which one-seventh is water.

DESCRIPTION. The surface of Canada is divided into the mountain regions of the east and of the west, and the great plain of the interior. These sections are distinguished by differences in climate, surface, and geological structure. Eastern Canada is not generally elevated, ranging from the narrow Atlantic coast plain to the highest points of Labrador, which do not exceed a height of about 8,000 feet. Most of the region ranges between 1,200 to 3,000 feet, with the depression chiefly toward the shores of Hudson Bay. North of the Saint Lawrence River, trending almost parallel to it, are the Laurentian Hills, which form the watershed between the basin of the Saint Lawrence and the rivers which drain into Hudson Bay and Ungava Bay. The altitudes do not exceed 4,000 feet, and detached from them are buttes or summits that trend toward the west, including Mount Royal, at Montreal, and a number of others south and west of that city. Near Niagara is the eastern extremity of a plateau, over the brink of which flow the waters from four of the Great Lakes, and thence it may be traced northward, where it finally rises and forms a series of rocky hills. The eastern shores, including the islands of Anticosti and Newfoundland, are extensions of the Appalachian Mountains, ridges of which appear to be partly submerged.

In the western portion of Canada are the elevated regions of the Rocky Mountains, many of which are covered with snow and glaciers. These extend into Canada from Montana, entering at the boundary between Alberta and British Columbia, whence they have a general direction toward the northwest to the vicinity of Mackenzie Bay. Immediately west of them, in southern British Columbia, are the Gold and Selkirk ranges, and near the coast, trending parallel with it, is the Coast Range. Mount Logan, in the southwestern part of Yukon, belonging to the Coast Range, is the highest peak, having an altitude of 19,514 feet above the sea. Other peaks are Mount Brown, 16,000 feet; Mount Murchison, 15,789 feet, and Mount Hooker, 15,700 feet. The summits of the Selkirks and Rocky Mountains are less elevated, ranging from 9,000 to about 14,000 feet. Among the highest peaks are Mounts Alberta, Forbes, Bryce, and Columbia.

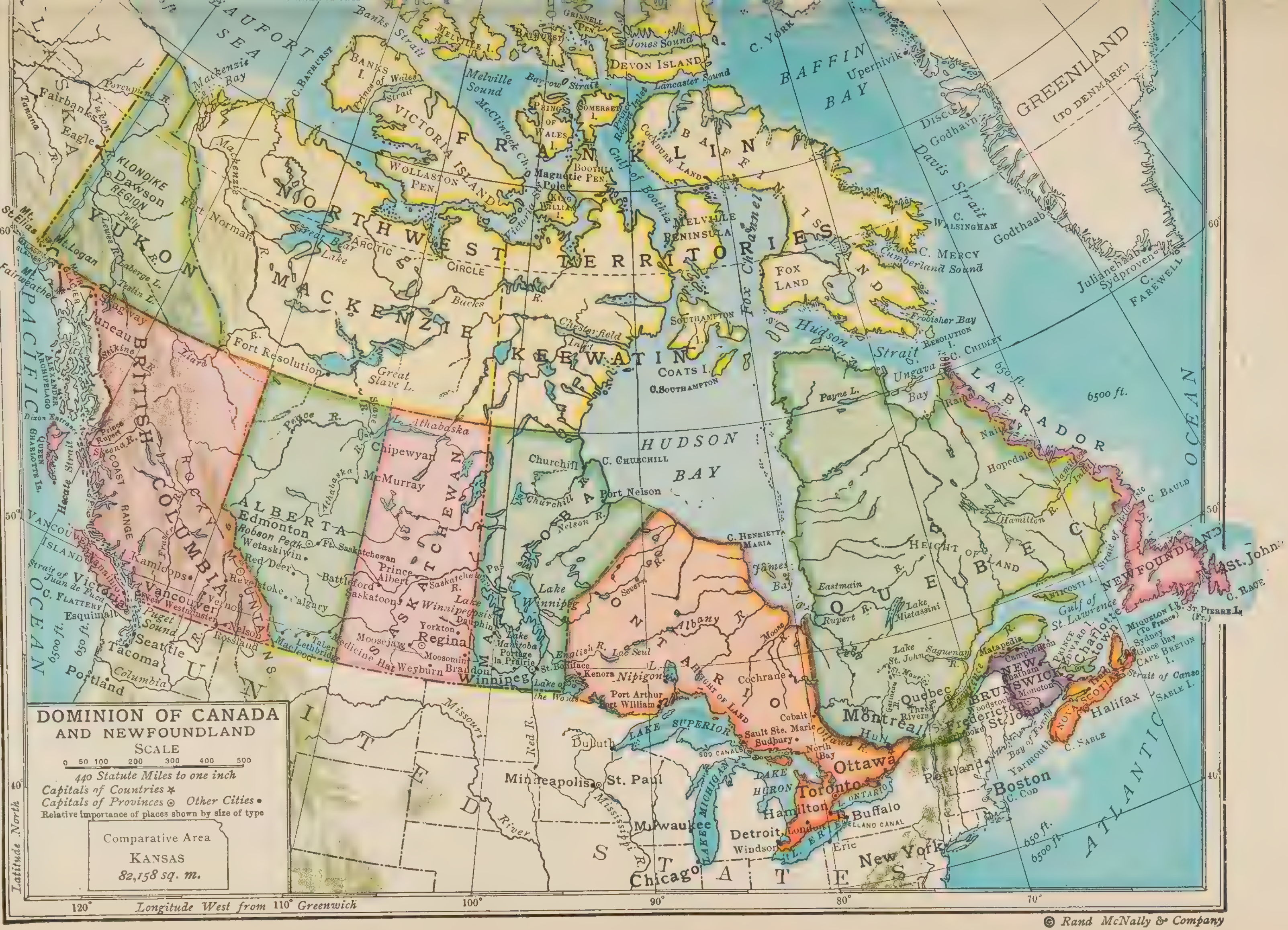
The great central plain is a continuation of the plains extending northward from the United States. It lies between the Rocky Mountains and Hudson Bay, and continues to the shores of the Arctic Ocean. A slightly elevated ridge runs almost through the center, dividing the drainage between the eastern section, which flows largely into Hudson Bay, and the western section, which drains chiefly by the Mackenzie toward the northwest into the Arctic Ocean. This region is a vast expanse of great fertility. It is covered with nutritious grasses in the southern part and with stretches of valuable forests in the northern section.

Rivers and Lakes. The rivers of Canada include some of the largest and most important streams of North America. In the eastern section is the Saint Lawrence, which, with its tributaries, is the chief highway of commerce. It furnishes transportation facilities by way of the Welland Canal from the Great Lakes to the Atlantic. Its northern tributaries include the Saint Maurice, the Ottawa, the Saguenay, and the Outarde, while those from the south are the Saint Francis and the Richelieu. Hudson Bay receives all of the drainage of the southeastern part of the great central plain, including the waters from the Saskatchewan, Nelson, Churchill, Hayes, and Severn. Drainage from the western part of the central plain is carried northwest by the Athabasca, Peace, Hay, Slave, Liard, and Mackenzie rivers. British Columbia has two river systems, the Fraser in the southern part and the Liard in the northern part, and the northwestern portion is drained into the Pacific by the Skeena and Stikine. Practically all of Yukon is in the valley of the Yukon, which rises in the southern portion and carries the drainage northwest through Alaska.

All parts of Canada are more or less diversified by lakes, except the regions of the far north. A number of small lakes are abundant in the eastern part, including the Payne and Michikamau lakes of Ungava; and the Mistassini and Saint John lakes of Quebec. Lake Nipigon is located in western Ontario; lakes Manitoba, Winnipeg, and Winnipegosis, in Manitoba; lakes Athabasca and Reindeer, in Saskatchewan; Great Bear and Great Slave lakes, in Mackenzie; lakes Okanogan and Kootenay, in British Columbia; and Lake Kluahne, in Yukon. On the southern boundary are lakes Ontario, Erie, Huron, Saint Clair, Superior, and Lake of the Woods.

Climate. In extent north and south, Canada lies between the north latitude 40° and the north pole, though a large part of the southern boundary is formed by the Great Lakes and parallel 49°, the international boundary. The warmest climate is in the southwestern part, at Victoria, where the temperature ranges from 37° to 60°. From the Pacific coast, modified by the warm Japan Current, the Chinook winds move eastward and temper the severity of the winter, reaching as far east as Alberta. In Saskatchewan and Manitoba, which lie a considerable distance from the sea, the climate is less equable and is marked with greater extremes. At Winnipeg and the country west and for some distance north, the climate is warm in the summer and cold in the winter, reaching from 90° in the growing season to a point as low as 50° below zero in the winter. The arid condition of the atmosphere, however, has a modifying effect and the cold appears less severe. In the southeastern part the climate is quite equable and is highly favorable to the arts of civilization, especially in all of Ontario and the larger part of Quebec, while the cold currents of the Atlantic cause Nova Scotia, part of Quebec, and all Labrador to have a damp and cold climate. The northern section of Canada has an arctic climate, with reasonably warm summers in some localities, while in others the ground remains frozen the entire year and the thermometer frequently registers 75° below zero.

The rainfall is abundant in all parts of the Dominion, except in a number of localities of the plains. The arid region is chiefly in Alberta and Saskatchewan, where irrigation is employed and a number of sections of British Columbia


DOMINION OF CANADA
AND NEWFOUNDLAND
SCALE
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Capitals of Countries ✱
Capitals of Provinces ⊙ Other Cities •
Relative importance of places shown by size of type
Comparative Area
KANSAS
82,158 sq. m.
Latitude North
Longitude West from Greenwich
120°
110°
100°
90°
80°
70°
60°
50°
40°
GREENLAND (TO DENMARK)
BAFFIN BAY
Davis Strait
Hudson Strait
HUDSON BAY
LABRADOR
NEWFOUNDLAND
QUEBEC
ONTARIO
MANITOBA
SASKATCHEWAN
ALBERTA
BRITISH COLUMBIA
YUKON
NORTHWEST TERRITORIES
FRANKLIN
MACKENZIE
KEEWATIN
NEW BRUNSWICK
NOVA SCOTIA
PRINCE EDWARD I.
BEAUFORT SEA
PACIFIC OCEAN
ATLANTIC OCEAN
UNITED STATES
ALASKA
ARCTIC CIRCLE
ROCKY MOUNTAINS
COAST RANGE
KLONDIKE REGION
Dawson
Ottawa
Montreal
Quebec
Toronto
Winnipeg
Regina
Edmonton
Victoria
Vancouver
Halifax
Fredericton
Charlottetown
St. John's
Boston
New York
Chicago

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have a scant precipitation. In the eastern part rain and snow are abundant and the shores abound in fogs. The section between the Luarentian Hills and Hudson Bay has ample rainfall, but the soil is poor or rocky.

FLORA AND FAUNA. Large forests originally covered the eastern part of Canada, extending from the Atlantic through the Saint Lawrence valley and most of Ontario. Large areas have been cut, but this section, especially Ontario, is still rich in timber. Manitoba has groves and belts of timber along the streams and in the vicinity of the lakes, but a large part of it and much of Saskatchewan and Alberta are comparatively treeless. However, these prairies are covered with nutritious grasses valuable for stock raising. A belt of timber extends from Hudson Bay through the northern part of Saskatchewan and Alberta to the Rocky Mountains, most of which lies north of the Saskatchewan, made up chiefly of poplar, spruce, and tamarack. Vast forests of evergreen trees, such as cedar, pine, and spruce, abound in the Rocky Mountains and the Coast Range. Along the Fraser and other valleys are large growths of the Douglas fir, which is valued for lumber and attains heights of from 200 to 300 feet.

The animals are quite similar to those of Northern Asia and Europe, and include many valuable fur-bearing species, such as the mink, sable, ermine, lynx, fox, and bear. In some sections of the Rocky Mountains the puma is still abundant, and the beaver inhabits a large part of the Dominion. The bighorn, elk, goat antelope, and pronghorn inhabit the western section, and in the Arctic region are such animals as the moose, caribou, musk ox, and white bear. Smaller game, such as the duck, goose, snipe, brant, and grouse, are abundant. Few species of the reptiles are represented, but the country is rich in birds of song and plumage. All the inland and coast waters have valuable fisheries.

MINERALS. Canada is rich in minerals. It may well be said that all of the more valuable classes used in the industries are represented. Bituminous coal is abundant, but is confined largely to Nova Scotia and British Columbia, the two extremes of the country, and lignite coal is found in Saskatchewan and Alberta. Anthracite coal of a good quality is obtained at Calgary, Alberta, and in the Queen Charlotte Islands. Iron is mined in Ontario, Quebec, and British Columbia, and is probably the most widely distributed of the minerals. The output of iron is not large, due chiefly to the fact that coal for smelting cannot be obtained at a moderate rate. The output of gold takes first rank, having an annual value of about $22,500,000, and the mining is done chiefly in British Columbia and the Klondike and other regions of Yukon. In the value of the produce coal ranks above gold, averaging annually about $65,500,000. Copper is mined in Ontario and British Columbia, but the ore is transported largely to the United States for refining. Ontario produces large quantities of salt and petroleum, and lead is obtained with silver in the Kootenay district of British Columbia. Nearly one-half of the world's supply of nickel is obtained from the mines in Ontario, which center largely in the Sudbury district northeast of Lake Huron. Quebec produces asbestos of a high grade. Other minerals mined more or less extensively are mica, graphite, gypsum, and pyrites. Building stone of a very high class is abundant, and quarrying is developed to a large extent in Nova Scotia, New Brunswick, Quebec, Ontario, and British Columbia.

FISHERIES. Few countries are favored like Canada in the quality and quantity of its commercial fish. The Great Lakes, the interior waters. and the coasts are productive as fisheries. In 1922 the output was valued at about $49,500,000. Cod and lobster are the most important fisheries of the eastern coast, where the output is large, and in addition there are valuable catches of the hake, smelt, haddock, mackerel, and sardine. Trout, pike, and pickerel are caught in the Great Lakes, and the whitefish is the most prolific in the lakes of Manitoba. Salmon fishing is of first importance in British Columbia. Pelagic sealing is a productive enterprise, and off the northern coast is the best whale-fishing region in the world. The minister of marine and fisheries has general oversight of the fish industry, which is wisely guarded by the government.

LUMBERING. Lumber has been one of the chief sources of wealth in Canada since its early settlement. Many of the forests of the eastern section have been exhausted, but partial protection against wastage is furnished by the laws now in force. The government has reserved as public property a large area of the public domain, and lumbermen secure it by paying a license to cut. For some years the value of lumber exports have had an average of about $135,500,000, most of the shipments being in the form of sawed products. Ontario, Quebec, and British Columbia have the most important lumbering industries, but timber extends across the continent in a belt ranging from 150 to 300 miles, and the north central section bids fair to furnish heavy competition when railroads are more generally constructed. The most important varieties of timber utilized include the Douglas fir, balsam, pine, spruce, hemlock, and many kinds of hardwoods.

AGRICULTURE. Agriculture is the leading enterprise, and about seven-tenths of the people pursue this occupation. A wide range of climate makes it possible to greatly diversify the crops. Farming is carried on in the valleys of Nova Scotia, New Brunswick, Prince Edward Island, and other portions of the Maritime Provinces. The narrow valley of the Saint Lawrence River has the largest interests in agriculture that have been developed at this time in Quebec, and here general farming has attained a high degree of perfection. Ontario is the leading province in agriculture and has a very large output of oats, barley, wheat, and peas. It is practically the only section where corn is raised profitably. In Manitoba, Saskatchewan, and Alberta especial attention is given to the culture of wheat, oats, flax, and barley. British Columbia has some exceptionally rich valleys, notably that of the Fraser River, and is leading in the production of fruits.

The eastern section is most particularly concerned in general farming, and the agriculturist diversifies both the crops and the live stock, while farming in the interior consists more generally in special lines, such as growing cereals or conducting ranches as distinct enterprises. Truck farming is carried on largely in southwestern Quebec and many parts of Ontario. All classes of domestic animals are grown, and bee-keeping and dairy farming receive studious attention. In the exportation of cheese, Canada takes first rank among the countries of the world.

MANUFACTURING. Canada is favored in having an abundance of natural resources, including a vast number of raw materials, hence has a future of great promise in the manufacturing enterprises. Lumber products take rank as the most important at present, and large quantities of sawed timber are exported. Salmon canning and pork packing are well represented, the former in British Columbia and the latter in Winnipeg and Toronto. Montreal and Quebec are centers in the manufacture of woolen goods, boots and shoes, and iron and steel products. Nova Scotia, having both coal and iron ore, has large developments in the manufacture of hardware and machinery. Other products include leather, furniture, cotton fabrics, paper, soap, cigars, chemicals, motor vehicles, and clothing.

TRANSPORTATION. The Great Lakes and the Saint Lawrence River are important as natural highways, and with the construction of a system of canals it has been made possible for vessels drawing fourteen feet of water to pass from Lake Superior to the Atlantic. Montreal is at the head of ocean navigation and is the seat of a large commerce, being favored by its location on the direct route to the Great Lakes and a number of extensive railway systems. Vessels from Montreal to Port Arthur pass from Lake Ontario by the Welland Canal to Lake Erie, thence by the Detroit River and Saint Clair Lake and River to Lake Huron, thence by a ship canal along the east bank of the Saint Mary's River into Lake Superior. Navigation by water is possible for long distances on many of the rivers, including chiefly the Fraser, Thompson, Athabaska, Yukon, Mackenzie, and Saskatchewan. Transportation is important on the lakes of Manitoba, with which Winnipeg is connected by the Red River of the North. The Canadian Pacific Railway has been operated as a transcontinental line since 1887, having its eastern terminus at Halifax, N. S., and its western at Vancouver, B. C. The Canadian National Railway extends from Portland, Me., and Quebec to Prince Rupert, on the Pacific, and has many branches. Other transportation lines include the Pacific Great Eastern, the Temiskaming and Northern Ontario, the Algoma Central and Hudson Bay, and the Great Northern railroads. The government has a line projected to Dawson, on the Yukon River.

Canada has an extensive foreign trade. The exports somewhat exceed the imports, and approximate an annual value of $1,239,492,000, while the imports average about $864,516,000. Animals and animal products are the chief exports, and next in order are lumber, cereals, dairy products, minerals, paper and wood pulp, leather, and fresh and canned fish. Among the chief imports are cotton and woolen fabrics, coffee, coal, tea, iron, machinery, and raw cotton. Great Britain and the United States have the principal share of the foreign trade, and the former has a preferential tariff in its favor, goods being admitted about one-third less than the tariff rates on imports from foreign countries. The rate of postage and the monetary system are similar to those of the United States.

EDUCATION. Public instruction throughout Canada is in a high state of development, though no centralized system of education is maintained for the whole Dominion. Each province has charge of its own system of schools and public instruction, and attendance is free in all the provinces, most of which have a nominal compulsory attendance law. The minister of education and his council have general supervision, while the separate schools are looked after locally by trustees elected in the districts. In the rural communities each township is divided into school sections and three trustees manage the school affairs of each section, while the municipalities have a board of school trustees, who have general supervision, and usually place the direct management of instruction in the hands of principals and superintendents.

Canada has many institutions of higher learning as well as numerous academies and denominational schools. The Dalhousie College, Nova Scotia, founded in 1820, was the first to be established. The University of Toronto, Ont., was founded in 1828; Queen's College, Kingston, Ont., in 1841; Laval University, Quebec, in 1852; the University of Manitoba, in 1877; and the Royal Military College, Kingston, Ont., in 1874. Many educational and scientific societies are maintained. These include the Nova Scotia Institute, the Royal Society of Canada, the Natural History Society of Montreal, the Scientific and Historical Society of Winnipeg, the Canadian Institute of Toronto, and the Society of Natural History in Victoria.

All religious beliefs are tolerated and no state church is maintained. The province of Quebec

ALBERTA PARLIAMENT BUILDING, EDMONTON

(Opp. 454) ONTARIO PARLIAMENT BUILDING, TORONTO

has a large per cent. of Roman Catholics, who are guaranteed the privileges enjoyed while it was a colony of France. A larger per cent. of the people belong to the Roman Catholic church than to any other denomination, numbering about 3,389,636. The second in numerical strength are the Presbyterians, who have a membership of nearly half that number. Next in order are the Anglicans, Methodists, Baptists, Lutherans and Greek Orthodox. Comparatively few Catholics reside in Ontario, Manitoba, and Saskatchewan. The Methodists have the largest membership in Ontario and the Presbyterians are most numerous in Nova Scotia.

INHABITANTS. The government of the Dominion and of the provinces has encouraged immigration and investments. The influx from foreign countries has been increasing steadily, and is largest from the United States, England and Wales, Scotland, Ireland, France, and Germany. Immigration from the United States may be said to date from about the beginning of the present century, when settlers were attracted by the fertile lands and vast resources of the western part of Canada. The Europeans represented most largely are the Germans, 310,501; the Scotch, 1,173,637; the Irish, 1,107,817; the English, 2,545,496; and the French, 2,452,751. These figures are based on the census of 1921, when the English of Canadian parentage included 683,480 and the French of Canadian parentage, 635,972 people. In that year the total number of persons of foreign birth was reported at 278,804. The Indian population is 107,978. These people consist chiefly of the four branches known as Algonquins, Eskimos or Innuites, Huron-Iroquois, and Tinnehs or Dine Dinijes. The Chinese and Japanese numbered 22,050, most of whom are in British Columbia.

Ottawa, the capital of the Dominion, is a thriving city on the Ottawa River, in Ontario. Montreal, the largest city, is at the head of ocean navigation on the Saint Lawrence, in Quebec. Torono, the second city, on the north shore of Lake Ontario, is a center of commerce and manufacture. Other cities of importance include Quebec, Hamilton, Winnipeg, Halifax, Saint John, London, Charlottestown, Vancouver, Victoria, Kingston, Brantford, Brandon, and New Westminster. The population of the Dominion in 1901 was 5,371,315; in 1921, 8,788,483.

GOVERNMENT. For the purpose of government, the Dominion is divided into provinces and territories. The following table contains a complete list together with the area of each division, as reported by the latest census:

PROVINCES.

Alberta	253,540
British Columbia	312,630
Manitoba	255,732
New Brunswick	27,985
Nova Scotia	21,428
Ontario	407,262
Prince Edward's Island	2,184
Quebec	706,262
Saskatchewan	250,650
Yukon (Territory)	207,076

In 1912 Ungava was annexed to Quebec and Keewatin was annexed partly to Manitoba and partly to Ontario. The Northwest Territories now have an area of 1,242,224 square miles.

The government is administered under a constitution drafted in 1864 and embodied in the act of 1867, when the union of the leading colonies created the Dominion of Canada, which was subsequently increased by accessions of territory. Executive authority is vested in the Governor General, who is appointed by the King of England. He is assisted by a Privy Council composed of a premier and 15 ministers, 13 of whom are heads of departments. The departments consist of those of justice, state, trade and commerce, railways and canals, marine and fisheries, militia and defense, posts, finance, agriculture, interior, public works, customs, and internal revenue.

Appellate civil and criminal jurisdiction is exercised in all parts of the Dominion by the supreme court, which has its seat at Ottawa, and an exchequer court has general powers of admiralty. Each of the provinces has a judiciary system, including justices of the peace, police magistrates, county courts, and a supreme court, but the judges of the two courts last mentioned are appointed by the Governor General of the Dominion. All the provinces have a Lieutenant Governor General appointed by the Governor General of the Dominion and a legislative department, which consists of two branches in some of the provinces and in others only one chamber, as in Ontario and British Columbia.

A Parliament, consisting of two houses, the Senate and the House of Commons, has legislative authority in the Dominion. All bills providing for revenues must originate in the House of Commons, and the Senate may not amend these bills, though it has power to initiate legislative action in many matters. The Governor General may disallow a bill passed by the two branches, or he may refer it for consideration to the home government, but the former is not exercised in practice, and the latter is employed only where a measure has direct reference to the interests of the empire at large, or affects its relations to foreign powers. Members of the Senate receive their appointment from the Governor General. They must reside in the province from which they are chosen, be born or naturalized subjects thirty years of age, and possess property valued at not less than $4,000. Membership in the House of Commons is based upon the population of the provinces, and the election is for five years by popular vote. The Senate consists of 96 members, of whom 24 are from Quebec, 24 from Ontario, 10 from New Brunswick, 10 from Nova Scotia, 4 from Prince Edward Island, 6 from Manitoba, 6 from Alberta, 6 from Saskatchewan, and 6 from British Columbia. Representation in the House of Commons is as follows: 82 members for Ontario, 65 for

Quebec, 16 for Nova Scotia, 11 for New Brunswick, 15 for Manitoba, 13 for British Columbia, 16 for Saskatchewan, 4 for Prince Edward Island, 12 for Alberta, and 1 for Yukon, making a total of 235.

The right to vote extends to all male and female citizens 21 years of age, but various restrictions are imposed by the provinces, such as residence for a specified time and registration on the assessment rolls. The King of England is the commander in chief of the naval and military forces, but they are under the control of the Dominion Parliament. The militia include all British subjects between the ages of 18 and 60, and there is no standing army, except a garrison of British troops at Halifax. The active militia is limited by law to 40,000 men, who are raised by voluntary enlistment or by draft. A small navy is maintained and the naval defense of the country is largely under the direction of the imperial government, which maintains forts at Halifax, in Nova Scotia, and Esquimalt, in British Columbia.

Literature. The literature of Canada dates from the early settlements made by the French in the valley of the Saint Lawrence, and much of the product is still in the French language, although many writings of value have been published in the English. An Ursuline convent and Laval University were founded in the seventeenth century and became the center of educational influences at an early date. Many of the earlier writings treat of discovery, history, and tradition of the Indians. Champlain published a description of his first voyage and many interesting narratives in 1601, and his writings were edited and published in six volumes by Laberdière in 1870. Lescarbot, one of the settlers in Acadia, published "The History of New France." Another noted historical work is Gabriel Sagard's "Relations des Jésuites," which is replete with thrilling incidents of the life and adventures of missionaries. A line of poetic productions, interesting for their description of the scenery and the spirit of progress in the new land, were issued in the course of time. Ernest Gagnon, in 1865, published a collection of these popular songs. They were translated by William McLennan under the title "Songs of Old Canada."

After Canada became English territory under the Treaty of Paris in 1763, it lost much of its literary spirit by the strife between the French and the English. However, the contention was happily overcome when the provinces were united as the Dominion of Canada in 1867. This event was followed by a new era in the literature of the country. French Canada still holds its own language and has many native-born writers. In the list may be named Michel Bibaud, author of "Histoire du Canada sous la dominion anglaise," and François Xavier Garneau, the writer of "Historie du Canada." Other writers in the French language include Abbé Faillon, Benjamin Sulte, Abbé Tanguay, and Faucher da Saint-Maurice. Many newspapers and other periodicals are published in the French language, most of which are centered in Quebec and Montreal. The French writings are not only rich in history and romance, but include many poetic works in a finished style.

The English portion of Canada is settled largely by English, Irish, Scotch, Germans, and immigrants from the United States, though the last mentioned are most numerous in the western part. Samuel Hearne (1745-1792), the noted English traveler, is one of the earliest Canadian writers in that language. His "Account of a Journey from Prince of Wales' Fort in Hudson's Bay to the Northwest" is one of the earliest accounts of travels and explorations. William Smith, in 1815, published his "History of Canada." Another work of merit is David Thompson's "War of 1812," which was issued in 1832. Joseph Howe is among the early orators, and his speeches delivered in the Parliament of Nova Scotia were published in a collected form in 1858. Among the eminent statesmen may be mentioned Alexander Mackenzie, Sir Charles Tupper, Sir John Macdonald, and Sir Wilfrid Laurier. Goldwin Smith, an eminent journalist, is well known from his historical work, "The United States; an outline of Political History." Other historical writers include Robert Christie, William Kingsford, Henry Scadding, George Bryce, and G. M. Adams. "Canada Under British Rule," published by J. G. Bourinot in 1900, is one of many commendable historical writings.

The books on general literature, especially novels and romances, are very numerous. However, the works in fiction are comparatively recent. John Galt, who lived for three years in Ontario, published an account of frontier life in his "Lawrie Todd." Mary Catherwood published "The Romance of Dollard" and "The Lady of Fort Saint John." G. M. Adams, the Canadian journalist, completed "An Algonquin Maiden" in 1886. Sir Gilbert Parker is the author of "The Right of Way," "When Valmond Came to Pontiac," and "The Seats of the Mighty." Among the poetical writers may be mentioned Isabella Valancy Crawford, W. W. Campbell, Sir Gilbert Parker, Bliss Carman, and Charles Sangster. The later poets and historians take cognizance of the combined national elements in the Dominion.

History. The Norsemen were the first to visit the eastern coast of Canada, on which Bjarni Herjulfson is thought to have landed in 986. Leif Ericson came across from Greenland in the year 1000, and is thought to have touched the shores of Newfoundland and Nova Scotia. John Cabot, a Genoese by birth and an Englishman by residence, sailed from Bristol and in 1497 landed on the coast of Labrador, claiming that district for England. Basque and Breton fishermen established cod fisheries off New-

(Opp. 456) EDWARD ALBERT, PRINCE OF WALES.

Edward Albert, Prince of Wales, is the eldest son of George V, King of England, and his wife, the former Princess Victoria Mary of Teck. He was born in 1894 and received the title of Prince of Wales in 1910, when his father ascended the British throne. As a child and youth he was carefully trained and educated. In 1919 he made an extended tour of Canada and the United States, landing at St. John's, N. F., and visiting Quebec, Ottawa, Montreal, Winnipeg, Vancouver, New York, Washington, and other cities and places of interest. While at the capitals of the two countries he met the leading public men and was heartily welcomed, making everywhere a favorable impression by his democratic manner and tactful speeches. In 1923 he made another extended visit to the American continent, spending a large portion of the summer on a farm in Western Canada.

(Opp. 457) NELLIE LETITIA McCLUNG.

Nellie Letitia (Mooney) McClung takes high rank among the writers and Chautauqua and public platform speakers of the Dominion. She was born in 1873, ranked well in her educational studies, and at an early age began to write for publication. In 1909 she published "Sowing Seeds in Danny," in which she sets forth the value and effectiveness of favorable environments and the early training of children, using a little boy of the neighborhood as an example to show how children are influenced by instruction and treatment. This book became widely known in England and the United States as well as in Canada. Other publications by the same writer include "The Second Chance," "Three Times and Out," "In Times Like These," and "Private Simmons (Mervin Simmons)." The *Book Review Digest* said of her: "Mrs. McClung is an Alberta woman who from the public platform told effectively the story of Canada in suffrage and war." In 1921 she was an official delegate to the Methodist ecumenical conference in England, being the first woman from Canada to serve in that capacity.

foundland in 1504, and Jacques Cartier, the French navigator, came to Quebec in 1534 and took possession of the country for Francis I., King of France. He made a second voyage in 1535 and ascended the Saint Lawrence as far as Montreal.

Marquis de la Roche was commissioned as lieutenant governor of Canada by the King of France in 1598. He bargained to colonize New France, as the country was called, and planted a settlement on Sable Island, but this was not permanent. Sir Humphrey Gilbert made a settlement at Saint John's, Newfoundland, in 1583, but this did not prove successful. Samuel Champlain made his first voyage to Canada in 1603, sailed up the Saint Lawrence under the direction of the French, and in 1608 founded the first permanent settlement in Canada, at Quebec. A few years later he discovered lakes Champlain, Huron, and Erie, and in 1611 planted a settlement at Montreal. He concluded a treaty with the Hurons and Algonquins, which ultimately brought the French into conflict with the Iroquois, who formed alliances with the Dutch and afterward with the English.

The Jesuits came from France in large numbers in 1625, and for nearly half a century predominated over religious and secular affairs at Quebec. In 1627 the Company of New France was organized by Richelieu and held sway until 1663, when it was superseded in control by the government of France, though a new corporation, known as the Company of the West, was established in 1664, and, like its predecessor, exercised a monopoly over the fur trade. Louis XIV., who had sent Colbert to America, looked upon New France as a valuable possession and sought to establish a permanent foothold on the Saint Lawrence and the Great Lakes. Frontenac was sent to America in 1672 and gave new life to the enterprise of strengthening the colony. He coöperated with LaSalle in exploring the Mississippi and some of its tributaries, and in the establishment of military posts at Niagara, Mackinac, and within the territory of the United States.

The effects following the explorations of Henry Hudson and the settlements by the English in Virginia caused a feeling of rivalry between England and France, and subsequently caused the so-called French and Indian Wars. The first clash took place as early as 1629, but France continued to retain a strong foothold until 1759, when Wolfe captured Quebec. The Treaty of Paris in 1763 ceded Canada, including all the territory between the Alleghenies and the Mississippi, to Great Britain, retaining only the city and district of New Orleans. From 1760 to 1764 Canada was entirely under military control, and in the latter year a provisional government was organized, which remained in force until 1774, when the Quebec Act was passed by the British Parliament. This legislation recognized the civil laws and institutions of the French in Canada, and provided that the Roman Catholics should exercise their religious practices without interference.

The American colonies that declared independence from England in 1776 tried to form an alliance with Canada, but it remained loyal throughout, and many loyalists left the United States during the Revolution. The number of immigrants from the United States within this period aggregates between 30,000 and 40,000, and these people not only founded New Brunswick and settled large parts of Ontario, but their descendants continue to constitute an influential element in the commercial and political affairs of the Dominion. The area of Canada was reduced by the Treaty of 1783, when the British relinquished their claim to the region now included in the states of Ohio, Indiana, Michigan, Illinois, and Wisconsin.

The provinces of Ontario and Quebec were founded in 1791 by an act of Parliament which divided the region into the two sections known as Upper Canada and Lower Canada. At that time the former was populated almost entirely with people of English descent, while the latter was inhabited by descendants of the French. In the War of 1812, between Great Britain and the United States, Canada was the scene of many battles, among them those of Chippewa, Queenstown, Lundy's Lane, and Moravian's Town. Lower Canada, or Quebec, had a popular assembly constituted largely of French, while the governor and legislative council was almost exclusively English. This caused much racial antagonism and in 1837 a considerable party under the leadership of Louis J. Papineau rose in revolt against the British authority, but the imperial government intervened and suppressed the revolutionary rising. It soon became apparent to the government that to unite the two sections would be the wisest policy, which was brought about under an act passed in 1839, and the union was completed in 1841. The Maritime Provinces, which included Nova Scotia, Cape Breton, New Brunswick, and Prince Edward Island, meanwhile retained their separate governments. Under the new union the crown appointed the governor and a legislative council, while the upper and lower branches of the legislative assembly were constituted of members elected by popular vote.

The Dominion of Canada was created in 1867 by the Act of Union passed by the British Parliament, and at that time consisted of the provinces of Quebec, Ontario, Nova Scotia, and New Brunswick. Manitoba was admitted in 1870; British Columbia, in 1871, and Prince Edward Island became a province of the Dominion in 1873. Newfoundland refused to enter the union and still comprises an independent colony. The more recent accessions are Alberta and Saskatchewan, which were united as provinces of the Dominion in 1905, formed of the region formerly included in the four territories of

Alberta, Assiniboia, Athabasca, and Saskatchewan. At the same time the region known as the Northwest Territories was reorganized. Later, in 1912, Manitoba and Ontario were enlarged by annexing the district of Keewatin, about equal parts to each, and the district of Ungava was annexed to Quebec. The Northwest Territories now embrace practically all of British North America lying north of north latitude 60°, excepting Yukon Territory but including Baffin Land and the Arctic Archipelago.

The Treaty of 1783 did not fix definitely the boundary between the United States and Canada, which was the subject of much contention for many years. However, the Ashburton Treaty, concluded in 1842, finally settled the northeastern boundary, and the northwestern boundary was finally adjusted in 1846. Treaties affecting the right of fishing in the Bering Sea and elsewhere have been the cause of some friction between the two countries. Reciprocal trade relations were established in 1854 and 1866, under which trade and commerce between Canada and the United States grew to much importance. In 1869 the Dominion acquired the vast territory held by the Hudson Bay Company since 1670, and this was followed by an uprising under Louis Riel in 1870, but he was defeated by a force under Sir Garnet Wolsey. Canada responded loyally for action in the Great European War. In 1917 compulsory service was adopted by a majority vote in the Dominion. The Canadian contingents greatly distinguished themselves in action, especially in the second battle of Ypres, in the Champagne sector, and in Greece and Palestine. The entire force mobilized consisted of 450,556 men, of which 383,523 were overseas. The total casualties were 159,084, including 42,919 dead and 50,000 incapacitated.

CANADA BALSAM (bạl'sam), a transparent liquid obtained from a species of fir native to Canada and the northern part of the United States. It is resinous, has a pale yellow color, and an acrid taste, and closely resembles turpentine. The name was derived from the balsam fir, from which it was first obtained, but it is likewise secured from the hemlock spruce and other species. It has the consistency of honey when it exudes from the bark, but becomes solid after exposure to the air. This product is valuable in making varnishes, in photography, and in medicine.

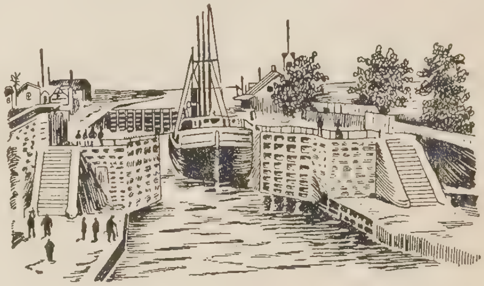
CANADA GOOSE, a wild goose which inhabits North America, breeding in the north and moving southward to the warmer region in autumn. It is about thirty-five inches long. The plumage is gray, with black on the head and the tail. Flocks of these geese begin to move north about the 1st of April.

CANADA HEMP, a species of herbs native to America, belonging to the dogbane family. It abounds throughout the western part of Canada and the United States, and furnishes a fiber used by the Indians in making nets and numerous articles. The bark of its root has tonic properties.

CANADIAN THISTLE. See **Thistle.**

CANADIAN RIVER (kȧ-nā'dē-an), a river of the United States, 900 miles long. It rises near the line between Colorado and New Mexico, thence flows through New Mexico, Texas, and Oklahoma. It receives the North Fork of the Canadian River in Oklahoma, and flows into the Arkansas River about fifty miles west of Fort Smith.

CANAL (kȧ-năl'), an artificial water course or channel. The construction of canals is of great antiquity. The earliest known in history were those built by the Babylonians, who utilized them for navigation and drainage. The Egyptians connected the Nile and the Red Sea by a canal at a remote period. Although it fell into decay through the fortunes of war, it was reopened by Pharaoh Necho about 605 B. C., and at intervals by others after him. Most of the ancient nations constructed canals. The great canal of China is 825 miles long. It was commenced in the 7th century A. D. and was completed in the 9th. Canals were first built in France, Germany, and England by the Romans, the canal at Caderike being the first artificial channel used for navigation in the British Isles. The Whitham and Trent rivers were joined by a canal in 1134, and in 1759 the Bridgewater Canal was commenced. The Erie Canal of New York was begun in 1817 and was completed in eight years. Many noted canals were built in the 17th and 18th centuries in Holland, Germany, Belgium, and other countries of Europe. The construction of canals has been greatly modified since the beginning of the era of railroad building, though, instead of being lessened, the tendency has been to build larger canals than at any time in previous history. Canals are now built mainly as aqueducts and for boats, ships, drainage, water power, and irrigation.


LIFT LOCK CANAL.

Aqueducts. Aqueducts are designed to carry canals across waterways or depressions in the ground. The Peruvians, Romans, and Grecians constructed aqueducts on a large scale, carrying water by these means for the irrigation of arid lands and to supply cities. Some of the most noted aqueducts of America are those of New York, Baltimore, and Saint Louis. They are maintained as a means of supplying water for city use. An aqueduct differs from a canal mainly in that it is shallower and is built so the water will flow by gravitation in its entire course. Many large cities have one or more aqueducts. One of the most noted of recent construction is across the River Loire in France. It is 2,175 feet long, and 21 feet wide, and carries eight feet of water. Its importance is not in its size, because other similar constructions are much larger, but from the fact that it is constructed almost entirely of steel plate. Instead of having solid masonry, it contains piers of masonry and its several parts are riveted together.

Boat and Drainage Canals. Boat canals serve for transportation purposes, in which vessels are often drawn by horses or mules on a towpath. The Erie Canal of New York is one of the notable artificial channels of this class in America. It is 351 miles long and connects the Hudson River at Albany with Lake Erie at Buffalo. The State of New York appropriated $9,000,000 in 1895 to deepen the canal and otherwise improve it for the use of larger vessels. It is now nine feet deep. Most drainage canals are constructed for sanitary and drainage purposes, but in some cases they are used partly for navigation. Many of this class of canals penetrate various parts of the Netherlands. The canal which carries the surplus water from Lake Zumpango, in Mexico, was commenced in 1607. Many years were required for its construction, being completed in 1789, a period of 182 years. The canal was greatly improved by an expenditure of $3,500,000 in 1889. It carries the sewage of the city of Mexico and drains the adjacent valleys. The greatest work ever attempted in this line is the Chicago Drainage Canal, which extends from the south branch of the Chicago River to the Des Plaines River, at Lockport, a distance of 28.05 miles. It was completed in eight years, beginning in 1892, at a cost of $42,000,000. By means of this canal water from Lake Michigan flows into the Chicago River and carries the sewage from Chicago through the Des Plaines to the Illinois River, and is intended eventually to provide water navigation from the Great Lakes to the Mississippi River.

Ship Canals. Ship canals are constructed for the passage of the largest ocean vessels. The Suez Canal, connecting the Mediterranean with the Red Sea, is the first large ship canal to be completed in modern times. It was opened in 1869, is 99 miles long, 327 feet wide, and 26 feet deep. The Kaiser Wilhelm Canal, in Germany, was opened in 1895. It connects the North and Baltic Seas, passing through Schleswig-Holstein. It affords passage for the largest vessels afloat, and its opening was one of the most important events in the commercial history of Europe. The project to cut a canal across the Isthmus of Panama, with the view of connecting the Atlantic with the Pacific, was long a subject for serious discussion. The first attempt was made in 1878 under the French engineer, M. de Lesseps, the builder of the Suez Canal. The work was commenced in 1881 with the design of completing it in 1904, but the company became involved in monetary difficulties and by 1889 only one-third of the work had been completed, with an expenditure of $156,400,000. In 1904 the project of constructing the canal was undertaken by the government of the United States. It was completed for use in 1914 at a total cost of $375,000,000, and was opened for traffic January 1, 1915. The Welland Canal, which connects lakes Erie and Ontario, is an important waterway of Canada.

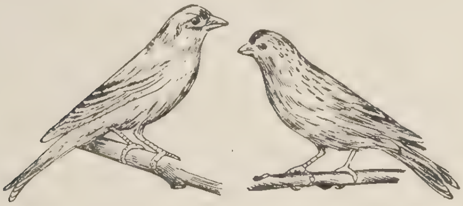
Other Canals. Water power canals are constructed to supply water power in propelling machinery. Among those noteworthy is the Sault Sainte Marie Canal, by which the water of the Saint Mary's River is utilized and furnishes force equal to 40,000 horse power. However, it is more important as a ship canal. It has an enormous traffic and the largest lock in the world. Irrigation canals were built by the Ptolemies in Egypt, and have been constructed more or less in all arid countries. The most extensive irrigation canals in America are located in Colorado, Nevada, Utah, California, and Alberta, where large areas of arid and desert land have been reclaimed and now yield abundantly, supporting large farming and dairying enterprises. Most of the boat and ship canals contain lift locks, by means of which navigation may be successfully promoted through hilly countries. A lift lock consists of a trough or tank holding water, into which vessels are floated, and which are raised and lowered bodily between the two canal levels by hydraulic or other power, aided sometimes by counterweights or flotation tanks. See **Suez Canal, Panama Canal, Welland Canal,** etc.

CANAL DOVER (dō'vẽr), a city of Ohio, in Tuscarawas County, seventy-five miles south of Cleveland. It is situated on the Tuscarawas River, the Ohio Canal, and the Baltimore and Ohio and other railroads. In its vicinity are coal and iron mines. The manufactures include flour, tinplate, vacuum cleaners, boilers, and machinery. It has a number of substantial business buildings and is a trade center for produce and merchandise. The city has public waterworks and other utilities. The first settlement on its site was made in 1807, and it was incorporated in 1865. Population, 1900, 5,422; in 1920, 8,101.

CANALETTO (kä-nä-lĕt'tō), **Antonio,** painter, born in Venice, Italy, Oct. 18, 1697; died Aug. 20, 1768. He was the son of a scene painter and took up the profession of his father. In 1719 he went to Rome and studied the remains of antiquity. His works consist largely of views of churches and palaces, and his painting of the "Grand Canal," now in the Louvre, is considered his best product. His nephew, Bernardo Belotti (1724-80), was an architectural painter, and was a member of the Academy of Dresden, Germany. He painted many views of Dresden and Vienna, some of which were engraved on copper.

CANANDAIGUA (kăn-an-dā'ḡwȧ), the county seat of Ontario County, New York, twenty-nine miles southeast of Rochester, on the Northern Central and the New York Central railroads. It has a fine courthouse, an orphan asylum, a public library, the Canandaigua Academy, and several charitable institutions. The manufactures include brick, leather, tinware, clothing, and knit goods. The surrounding country is agricultural. It has a good jobbing trade in merchandise. The vicinity was settled in 1789 and it was incorporated in 1815. Population, 1900, 6,151; in 1925, 7,686.

CANARY (kȧ-nā'rȳ), a singing bird of the finch family, native to Madeira and the Canary Islands. It is easily tamed, thrives well in cages, and lives from twelve to sixteen years in captivity. It was introduced into Europe about 400 years ago, and is now extensively bred in all civilized countries. A large number of species have been studied and the training of canary birds has long been a subject of much interest. In the wild state these birds frequent the vicinity of houses, where they build their nests. They feed on the seeds of grasses, buds, and insects. The size has been enlarged by domestication, some measuring five inches in length, but it is doubtful whether the musical tones of their voice have been improved. Large interests are vested in raising canary birds in some parts of Europe, especially in Great Britain and the Harz Mountains of Germany. The male birds of a yellow color bring the largest prices in the market, often as much as $150 for a single bird. Other favorite colors are red, brown, and black. The seed of millet and canary grass is the favorite food.



GOLDFINCH CANARY. WILD CANARY.

CANARY GRASS, an annual grass native to the Canary Islands, cultivated for its seed, which is much used as food for cage birds. It has been introduced and is cultivated in many parts of Europe and America. A fine flour is obtained from the seed and is used for glue or sizing in making fine cotton textiles and finishing silken stuff. A species known as southern canary grass is abundant in the southeastern part of the United States, from Florida to South Carolina, and in many localities as far west as California. The ribbon grass cultivated in gardens is a variety with white-striped leaves.

CANARY ISLANDS, anciently called Fortunate Islands, a group of thirteen islands lying about seventy miles from the northwestern coast of Africa. The area is 2,808 square miles. The most important of the group are Teneriffe, Fuerteventura, Grand Canary, Lanzarote, Palma, Gomera, and Hierro or Ferro. The islands are of volcanic origin, and have a mountainous surface with precipitous cliffs near the sea. Among the most important peaks are Pico de Teyde, 12,190 feet, El Cumbre, 6,650 feet, and Mount Mudo, 2,160 feet. They have a mild and favorable climate and the soil is fertile. The exports aggregate nearly $2,000,000 annually, and consist principally of cereals, potatoes, wine, raw silk, cochineal, and tropical fruits. The Canary Islands were discovered by the Spaniards in 1316, who conquered the native tribes known as the Guanches, and have since been under the control of the Portuguese or Spaniards, who now constitute the principal part of the population. Laguna is a pleasant city and the seat of the resident Roman Catholic bishop. Santa Cruz is a well fortified city and the capital of the island group. The government is administered by a local governor under the supervision of Spain, to which country the islands belong. Population, 1922, 514,959.

CANBY (kăn'bĭ), **Edward Richard Sprigg,** soldier, born in Kentucky in 1819; shot in Siskiyou County, California, April 11, 1873. He graduated at West Point in 1839, and the same year took part in the Seminole War. At the beginning of the Mexican War he was made captain, and for bravery at Churubusco was made a major. He was assigned to the department of New Mexico in 1861, in which he defended his territory against the Confederates under Gen. Sibley. He commanded in New York in 1863, captured Mobile in 1865, and received the surrender of the armies commanded by Gen. E. K. Smith and Gen. R. B. Taylor. In 1866 he was raised to the rank of brigadier general. Subsequently he was assigned to treat with the Modoc Indians in Oregon, and while in northern California was treacherously shot by the chief, Captain Jack, while concluding a treaty of peace.

CANCELLATION (kăn-sĕl-lā'shŭn), the process of shortening indicated division by rejecting the same factors from both dividend and divisor. It depends upon the principle that if the same factor be rejected from the dividend and the divisor both terms are divided by that factor, or dividing both dividend and divisor by the same number does not affect the quotient. Cancellation was formerly treated by itself in a chapter in elementary text-books, but it is now generally placed with the definitions of elementary processes. The following serves as an illustration of the process:

$$\frac{\cancel{3} \times 7 \times \cancel{6}}{\cancel{3} \times \cancel{6}} = 7$$

CANCER (kăn′sẽr), the popular name of a malignant tumor found in different parts of the body. Physicians generally divide the disease into two classes, the *sarcoma* and the *carcinoma.* The former is not considered a true cancer, since it is more vascular than the true cancer and is not epithelial in character. As a rule, it occurs before the age of forty years, while the true cancers occur most frequently after the age of forty. It frequently is caused by injury and is not hereditary. In many cases it does not affect the skin, but when the skin gives way the sarcoma is exposed as a mass of bleeding animal matter.

The true cancer is a tumorous growth and is composed essentially of epithelial cells. It has a central mass, or *aveoli,* from which isolated groups of cancer cells extend to the neighboring structures. The cause of this disease is not definitely known, but is variously assigned to heredity, constitutional vices, injury, and parasitic influences. The two general forms are known as *scirrhous,* or hard cancer, and *medullary,* or soft cancer, though there are several varieties of the latter. The hard cancer most frequently affects the axilla, the parotid glands in the neck, and the female breast; the soft cancer generally frequents the internal organs, such as the stomach, spleen, kidneys, liver, and aesophagus. Hard cancer mostly affects people over fifty years of age and lingers many years, while the soft occurs mostly in those younger and is quite often of short duration. There is no definite cure; the chief remedy is excision, though the cancer often returns. In recent years it has been possible to obtain good results by the application of the X-rays, but the permanent cures have not been numerous.

CANCER, in astronomy, the fourth sign of the zodiac. The northern tropic is known as the Tropic of Cancer. See **Zodiac; Tropics.**

CANDIA (kăn′dĭ-ȧ). See **Crete.**

CANDLE (kăn′d'l), a cylinder of wax or fatty matter containing a wick used for lighting. Candles are made principally of tallow, paraffin, bleached wax, spermaceti, bayberry tallow, palm oil, and stearin. They are primarily divided into *dipped* and *molded* candles, according to the mode of their manufacture. Dipped candles are made by stretching a number of wicks on a frame, and dipping them into melted tallow from time to time until a sufficient amount has accumulated around the wicks to form candles. Molded candles are made by melting the tallow and casting it in molds, in which the wicks have been previously fixed, and when cooled the candles are withdrawn. In ancient times candles formed the principal means of lighting. They were used very generally up to about the middle of the last century, when they began to be displaced by mineral oils. At present gas and electricity in cities and mineral oils in country districts have largely displaced the commercial importance of candles.

CANDLEBERRY, or **Bayberry,** a small tree native to the eastern part of North America, but most abundant in the southern part of the United States. It attains a height of about eighteen feet, but is usually a low-spreading shrub and has oblong evergreen leaves. The fruit consists of small berries, which, when ripe, are covered with a greenish-white wax, known as bayberry tallow. Four or five pounds of this product is obtained from a bushel of berries. It is used for candles, which burn slowly and emit a pleasant odor, and in some localities it serves to make a soap. A species of this tree, native to Japan, attains a height of fifty feet, and is cultivated to some extent in California for its edible fruit.

CANDLEFISH, a fish native to the Pacific Ocean, off the western coast of North America, from Oregon to Bering Sea. It is classed with the smelt family, has a somewhat pointed and conical head, and grows to a length of fifteen inches. The flesh is preferred to that of the trout, and an oil is obtained from it quite similar to cod-liver oil. The oil in these fish is used by the Indians for lighting. A rude light is obtained by drawing a piece of rush pith through the fish, which, in burning, gives out a light quite suitable for the tents of the natives.

CANDLEMAS (kăn′d'l-mas), the feast of the purification of the Virgin Mary, instituted in the year 492. It is observed on February 2. The feast is kept by the Roman Catholic Church. In its observance lighted candles are carried in a procession, and the candles to be used the ensuing year are consecrated on that occasion.

CANDLE NUT, a tree native to the East Indies and Madagascar. It bears a nut with a hard shell about the size of a walnut, the kernel of which is used as food and for the manufacture of oil, known as walnut oil and kekune oil. The natives obtain lampblack from the shell, and in some localities burn the kernels as torches.

CANDY (kăn′dy̆), a form of crystallized sugar used as an article of confectionery. It is made by boiling sugar or syrup to render it hard and transparent. The industry of candy making has assumed large proportions and is an important enterprise in many countries. The people of France engage in the industry more extensively than any other. The candy market is well represented in nearly every country of the world. In most places candy is sold in connection with other articles, usually in drug and grocery stores, but in the larger cities it has come to be handled to a large extent as a distinct line. A place in which candy is the leading article of trade is generally known as a *candy kitchen.*

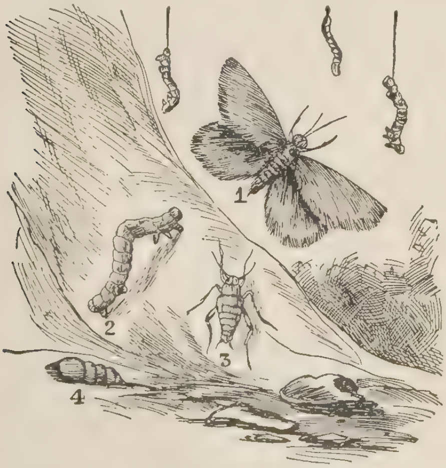
The art of candy making is concerned in producing a large variety of confections. Many of the sweetmeats are flavored with fruits or essences, such as lemons, strawberry, peppermint, vanilla, etc. The nuts, such as peanuts and walnuts, are used in making choice candies. Among the fancy varieties are caramels, chocolate creams, and rock candy.

In making candy the sugar is usually dissolved in water with a small amount of glucose added to give the necessary consistency, and this is boiled until the proper thickness is secured. It is next poured on slabs of marble to cool, after which it is worked to give it hardness and the desired color. It is cast in cornstarch molds to give it form and size, and a press is used to form figures or mottoes. The manufacture has grown to such an extent and has assumed such various forms that many classes and kinds of candy are produced, some of which are beautiful and quite nutritious. The harm attending the consumption of candy is due altogether to several unwholesome coloring substances often used, and to an excess in eating it.

CANELLA (kȧ-nĕl′lȧ), a small tree native to the warmer part of North America, often called wild cinnamon in Florida and the West Indies. It bears a small black berry, and its bark is known in commerce as white-wood bark. All parts of the tree are highly fragrant and the bark has an acrid, pungent taste. It is employed as a stimulant tonic.

CANIS MAJOR (kā′nĭs mā′jẽr), a constellation of the Southern Hemisphere, located under the feet of Orion. Its principal star, Sirius, is the brightest of all the stars. Near the constellation of Canis Major, just below Gemini, is Canis Minor, which contains Procyon, a star of the first magnitude.

CANKERWORM (kăn̲′kẽr-wûrm), the larvae of two species of moths, sometimes called measuring worms from their peculiar locomotion. They are abundant in Canada and the northeastern part of the United States, where they attack fruit trees, especially apples and pears. The eggs are deposited by the wingless female in orchard trees, and the larvae are destructive to the foliage in the early period of their life, but later they descend to the ground, where the metamorphosis takes place. Many fruit trees and current bushes are stripped of leaves in the spring by these insects, which are very voracious.



CANKERWORM.
1, Adult Male; 2, Larva; 3, Adult Female; 4, Eggs.

CAN MAKING, the art of making vessels for holding and carrying liquids, usually of tinned iron or other sheet metal. This enterprise has grown remarkably since the industry of canning vegetables, fruits, meats, milk, spices, varnishes, and paints has been developed. In the United States there are ten or twelve large establishments engaged in can making for supplying canning factories. The larger establishments have a daily output of over 100,000 cans. Oysters, fruits, and vegetables are packed in round cans of various sizes, mostly from one to three pounds each, but some are as large as a half gallon or a gallon. Fish, sardines, and meats are packed in oval cans. Can making is carried on entirely by automatic machinery, which is used both in cutting and soldering the cans. The tops and bottoms are stamped by foot power, a boy or man being able to stamp a thousand cans per day.

CANNAE (kän′nȧ), an ancient town in Italy, on the Aufidus River, now called Ofanto, which became famous on account of a great victory won by Hannibal over the Romans, Aug. 2, 216 B. C. He commanded the Carthaginian army of 10,000 cavalry and 40,000 infantry. The Roman army under Aemilius Paulus and Terentius Varro consisted of 6,000 cavalry and 80,000 infantry. By skillful maneuvering Hannibal was able to force the Romans into a position in which they were required to face the sun and a strong wind, while he occupied points of advantage and led the attack with fearful slaughter to the Romans. Fully 70,000 Romans were killed and the Carthaginians lost only 6,000.

CANNEL COAL (kăn′nẹ̆l kōl), a variety of bituminous coal which is very dense and compact. It is of a dull bluish or grayish black color and has little luster. It is used mostly in the manufacture of gas and oils. On distillation it yields from forty to sixty-five per cent. of volatile matter. The cannel coal fields of the eastern part of Kentucky are the most extensive in America, but it is found in smaller deposits in Ohio, Indiana, and Scotland.

CANNES (kän), a city of France, in the department of Alpes-Maritimes, twenty-two miles southwest of Nice. It is located on the Mediterranean, has railroad facilities, and is the seat of considerable export and import trade. The vicinity produces large quantities of olives, figs, oranges, and other fruits. The chief building is the Abbey of Donjon, built about 1070. Among the newer structures are a library, a town hall, and a museum of antiquities.

Cannes is the place where Napoleon landed in 1815, when he returned from Elba. Population, 1922, 30,318.

CANNIBAL (kăn'nĭ-bal), one who eats human flesh. The practice of eating human flesh has existed from very ancient times, but the name now applied to it was originated about the time when Columbus discovered the West Indies, where the Caribales were a man-eating race. The practice was known in the time of Homer, and he ascribes it as an unnatural attribute to Polyphemus. Cannibalism was practiced in North America by the Atakapa Indians and other tribes on the coast of the Gulf of Mexico. The Aztecs made human sacrifices to their gods and afterward the bodies were eaten by the populace. Cannibalism still prevails among certain tribes of Australasia and Central Africa. When a number of African tribes war with each other, they consume the slain and captives as food.

CANNING (kăn'nĭng), the industry of preserving fish, meats, fruits, and other articles of food in air-tight cans. Nicholas Appert, a Frenchman, discovered this process in 1795, and it was introduced in Canada and the United States in 1815. In canning it is necessary to destroy the germ which causes fermentation, which is done by cooking the product to be canned, either before or after it is placed in the can. The cans used in the industry are manufactured in large establishments and sold to canning factories. In canning vegetables or cereals they are placed in cans by machinery, after which the cans are carried to soldering machines and soldered by automatic devices. The labels are put on the cans by a machine, which spreads the paste and adjusts the label to its proper place. The most important products canned are fish, beef, corn, tomatoes, peas, beans, and fruits.

In the United States there are over 2,250 canning factories, the largest number being operated in Maryland, but there are more or less in all the states. The following states lead in the industry: Maryland, Maine, New York, Virginia, New Jersey, Delaware, and California. There are no less than 28,000 fishermen employed in gathering mackerel, white fish, salmon, and other fish for canning purposes, using 3,000 fishing vessels, while about 21,500 men are employed in dredging for oysters. The lands used in producing vegetables and cereals for canning purposes aggregate 1,500,000 acres. It is shown by the census that 3,000,000 persons are indirectly connected with the business, while 1,000,000 secure employment during the canning season. The canned meat produced annually is valued at $35,000,000, while the fish, fruit, and cereals aggregate much more.

CANNING, George, statesman and orator, born in London, England, April 11, 1770; died Aug. 8, 1827. He was educated at Eton and Oxford, and distinguished himself early as a writer and speaker. In 1794 he entered Parliament, making a marked impression early in his official career. Later he was treasurer of the navy, was twice secretary of foreign affairs, and served as prime minister in 1827, but died within the year in which he was appointed to that position. His literary works included assistance on the *Anti-Jacobin,* a political paper, and a political poem entitled "The Needy Knife-Grinder." He was intensely British, using every diplomacy possible to promulgate British interests, and was prominent in his advocacy of the abolition of the slave trade. He was buried near the tomb of Pitt in Westminster Abbey.

CANNON (kăn'nŭn), a conical tube for discharging projectiles. Cannon were first used in Europe in the 14th century, sometime after powder had been introduced as an ammunition of war. Those used at first were made of longitudinal iron bars hooped with rings, in which the charge was placed in the socket of the breech, the shot consisting of stone, lead, or iron. They were employed successfully by Edward III. at Calais in 1346 and by the Turks at Constantinople in 1394, after which they came into general use. In the 15th century brass guns capable of throwing a thirty-pound shot were introduced, and soon after the balls were increased to forty-five pounds. At Edinburgh cannon of twenty-inch caliber were made before the end of the century, while those made at Ghent were twenty-six inch. In the early part of the 16th century bronze and iron guns were made in Western Europe, some of which were portable and others were used as siege guns, capable of throwing an eighty-pound ball. The guns of the 17th century were made lighter, with the object of having them more easily portable for field use, and cartridges were invented and successfully used in action. The guns made in the 18th century were cast solid and afterward bored, these containing smooth bores. Rifled field guns were first introduced in 1859, since which time rifling has been employed in making cannon of all calibers.

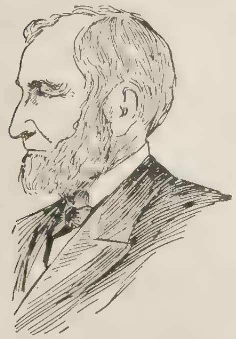
The cannon used in early times were known as bombards. They were short and clumsy, with a larger opening at the mouth than at the breech, and were held together by large hoops. Those used by modern nations include the *howitzers, mortars, Rodman, field* and *Gatling.* Howitzers are intended for short range and are used to throw shells into the enemy's ranks when near at hand. Mortars are intended to throw bombs or shells so as to fall into fortified places and do damage by exploding. They have short barrels with very large bores to admit large missiles. Some forms are used to shoot shells at the enemy horizontally. The Rodman gun is mounted on a carriage and is used at fortifications. Field guns are mounted on gun carriages and are drawn by horses or gasoline engines as the requirement may demand.

Siege guns of great power, such as the 16.5 inch (42 centimeter) Krupp mortar, were used successfully in 1914-1915.

The Gatling gun has a number of barrels, usually ten, which are made to revolve on an axis by mechanical arrangement, and as each barrel passes an opening it receives a cartridge and is fired. It has a capacity of 400 shots per minute. The Armstrong and Krupp are the most celebrated guns of modern manufacture. The latter is especially popular. It is manufactured in Essen, Germany, at the most extensive cannon factory in the world. The largest size weighs 125,000 pounds, carrying a cannon ball about 9,000 yards, and is capable of penetrating a 25-inch sheet of iron at a distance of 1,500 yards. The larger cannon are used at fortifications and on warships. All of the cannon of modern manufacture are rifled with a spiral groove to give the ball a rotary motion. They are cast solid and then bored by being made to revolve in a drill. Recently the Vickers-Maxim breech mechanism has been adopted for use in the large guns of the navy, which not only ejects the exploded primer automatically, but in addition raises the new load into position at the breech of the gun.

CANNON, George Q., an apostle of the Mormon Church, born in Liverpool, England, Jan. 11, 1827; died April 12, 1901. At an early age he embraced the teachings of the Mormon Church. He came with his parents to Nauvoo, Ill., about 1844, and was one of the founders of Salt Lake City. In 1850 he went as a missionary to the Sandwich Islands, where he translated the "Book of Mormon" into the Hawaiian language, and on returning to Utah, in 1854, he edited the *Deseret News*. In 1872-81 he represented Utah in Congress as a territorial delegate, and in the latter year was deprived of his seat because he was a polygamist. He was a member of the legislative council of Utah six years, and published a number of tracts favorable to the Mormon Church.

CANNON, Joseph G., statesman, born in Guilford, N. C., May 7, 1836; died Nov. 12, 1926. After studying in his native town, he took up the study of law, and served as state's attorney in Vermilion County, Illinois, in 1861-68. He was elected to Congress as a Republican in 1872, where he served successively until 1891, and was again elected in 1892 and at several succeeding elections, the last time in 1920. He was influential on the floor of the House, held a number of important positions on committees, and was speaker several terms. As presiding officer he was criticized adversely for his conservative views on tariff revision.


JOSEPH G. CANNON.

CANO (kä′nō), **Alonzo,** painter and architect, born in Granada, Spain, March 19, 1601; died Oct. 3, 1667. He studied painting under Juan de Castillo and sculpture under Martinez Montanes, and originated a class of painting known as the School of Granada. Philip IV. appointed him court painter in 1638, and he remained in his native town for some time as painter in the churches. His work in architecture is represented by a number of buildings in Madrid and Granada. His chief works in painting include "Conception of the Virgin" and a large number of portraits.

CANOE (kȧ-nōō′), a small boat that is narrow in the beam and is propelled by paddles. The name was derived from the boats made by uncivilized people. Many were constructed by laying thin strips of wood across each other at various angles, which were tied together, and then covered with pieces of bark or hide. They were generally propelled by paddles, but some of the larger ones carried sails. The American Indians made canoes of cedar wood covered with an unbroken sheet of the bark of the white birch, while the Indians of the plains used buffalo hides. Strong and durable canoes were made in forest districts by hollowing out birch logs, and this kind was probably the best made by primitive people. The Feejee Islanders now construct boats of very large size, some a hundred feet in length. The Society Islands contained a naval force, at the time they were visited by Captain Cook, consisting of 1,700 war canoes, manned by 68,000 soldiers. The Eskimos make canoes of walrus and seal skins stretched over whalebone, while those constructed by the natives of the Polynesian Islands are made of planks. Stanley, in his African travels, found canoes used by the natives on inland lakes that consisted of very light material, often of seaweeds, and larger ones of skin and bark capable of carrying eight or ten men.

The name *canoe* is now applied to any small boat made of paper, tin, wood, India rubber, or canvas, and used for making long voyages or in pleasure exercises. John Macgregor traveled 3,000 miles in his Rob Roy canoe. Some are made for only one person, while others are for two or more, with a seating convenience in the center. The American Canoe Association has several thousand members, and its official magazine, *The American Canoeists*, is devoted to the interests of sports and pleasures with the canoe. Other American organizations are the Northern Association of Canada and the New York Canoe Club. Indeed, many canoe clubs are maintained wherever lakes and rivers are accessible. An open and undecked canoe known as the *Canadian canoe* is used extensively in canoeing.

CAÑON (kä-nyōn′), or **Canyon,** the Spanish name applied to a tube, and used by Spanish-Americans to designate deep ravines or gorges worn by water. It is now in general use in America. The cañons of the Rocky Mountains are particularly grand. The Grand Cañon of the Colorado, in Arizona, consists of immense gorges 200 miles long. It is from five to twelve miles wide, and from 5,000 to 7,000 feet deep. Many of the towering walls are sedimentary rock of gorgeous purple and vermilion color. Others are narrow channels cut several thousand feet deep, with terraced sides or perpendicular walls. These remarkable phenomena are widely distributed throughout the Cordilleras of America from Alaska to Panama. The most remarkable in the eastern part of the United States is the one in central New York, known as the Glen, at Watkins, near the headwaters of Seneca Lake.

CANON (kăn'ŭn), a rule or ordinance made by an ecclesiastical council in relation to religious matters. A canon rule instituted by Gregory the Great provided for the celebration of the mass with more splendid accompaniments than had hitherto been used, while others of the Catholic Church constitute laws and regulations for observance by the lay members. Other canons of historical interest include those passed for the government of the Church of England and the anciently adopted Old Testament and New Testament canons. The Old Testament Canon, anciently adopted on the authority of the Jewish Talmud tradition, was designed to give public sanction to the Pentateuch. The New Testament Canon came into force about 170 A. D., by which the books of the New Testament were declared to be canonical.

CAÑON CITY, county seat of Fremont County, Colorado, on the Arkansas River, forty miles west of Pueblo. It is on the Denver and Rio Grande, the Atchison, Topeka and Santa Fé, and other railroads. The site of the city is 5,340 feet above the sea, surrounded on three sides by mountains, and is noted as a pleasure and health resort. The Royal Gorge and the Skyline Drive are near the city. Cold and thermal mineral springs abound in the vicinity. The chief buildings include the public library, the high school, and the State penitentiary. Coal, iron, silver, copper, petroleum, and building stone are obtained in the vicinity. Population, 1900, 3,775; in 1920, 4,551.

CANOPY (kăn'ō-pȳ), in architecture, an ornamental arched or rooflike projection, with a niche or doorway. The term is applied in Gothic architecture to the rich covering over tombs, doors, and windows. In Germany and France the canopies of early times were elaborate and complicated, while those of England are usually simple in form. The cathedrals of Europe as well as many of the larger churches furnish examples of canopies.

CANOVA (kȧ-nō'vȧ), **Antonio,** founder of a school of sculpture, born at Passagno, Italy, Nov. 1, 1757; died in Venice, Oct. 13, 1822. He displayed much talent in modeling while yet a mere youth. Later he gained the friendship of Giovanni Falieri, by whom he was sent to work under the direction of Bassano. Afterward he went to Rome to study under the most illustrious artists in Italy. His genius was recognized by his own country and his fame soon spread to all art centers of Europe. He was employed at Paris to model a statue of Bonaparte. After 1815, when the French empire had fallen, he was sent by the Roman ambassador on a mission to Paris, and before returning to Rome he visited Switzerland, Germany, and England. He was soon after created marquis and was given a pension, which he spent in the support of art and artists in the Roman capital. In 1827 a marble statue was erected to his memory by the Church de Frati, and another in 1833 by the order of Leo XII. in the library of the capitol. Canova was the founder of a new school of Italian sculpture and to him is due the revival of this art, in which interest had been lost before his time. His life and works mark an epoch in Italian art. Among his most noted works are "Venus and Adonis," "Psyche and Butterfly," "Hercules Hurling Lichas into the Sea," "Cupid and Psyche," "Belvedere Apollo," "Venus Rising from the Bath," and "Theseus Killing the Minotaur." His leisure hours were spent in painting. Some of his paintings take high rank with those of the Venetian masters.

CANOVAS DEL CASTILLO (kä'nō-vȧs dĕl kȧ-stē'lyō), **Antonio,** statesman, born in Malaga, Spain, June 5, 1828; died in 1897. He studied at the University of Madrid, where he pursued courses in philosophy and law, but later decided to take up a political career. In 1852 he was elected to the Cortes as a Liberal, and in 1874 supported the restoration of Alfonso XII. on the throne. He was the prime minister in 1874-79, when he was succeeded by Martinez Campos, but held the premiership several terms after 1880. He was made a member of the Academy of Madrid in 1867 and is the author of several important publications. These include "History of the Decline of Spain from the Accession of Philippe III. to the Death of Charles II."

CANSO (kăn'sō), a seaport of Nova Scotia in Guysborough County, near Cape Canso. It has considerable trade in merchandise and is the seat of several consular agents. The waters of its coast have valuable fisheries. Canso is the landing place of several cables belonging to the trans-Atlantic lines. Population, 1911, 1,617.

CANSO, Strait of, a narrow channel separating Nova Scotia from Cape Breton Island. It is about two miles wide and seventeen miles long, and connects Chebucto Bay with the Gulf of Saint Lawrence. Cape Canso, the eastern extremity of Nova Scotia, is the east of Chebucto Bay, projecting into the Atlantic Ocean.

CANTABRIAN MOUNTAINS (kăn-tā'brĭ-an), a range of highlands in the northern part of Spain, near the shore of the Bay of Biscay. They extend a distance of 300 miles, from the Pyrenees to Cape Finisterre, and their loftiest summits are near the central part. Many promontories characterize the coast, but the slopes toward the east and south are gradual and have valleys of much fertility. The altitudes range from 2,675 feet to 8,790 feet.

CANTALOUPE (kăn'tȧ-lōōp). See **Muskmelon.**

CANTATA (kȧn-tä'tȧ), a poem or dramatic composition set to music, in which solos and choruses are rendered. It originally assumed the form of an opera, with voice parts and accompaniments of the violin and other instruments, but is now shorter than either opera or oratorio. The cantata includes compositions of either sacred or secular choral works, and may be lyric or dramatic. It differs from opera in having no stage accessories.

CANTEEN (kăn-tēn'), a vessel of metal or leather used by soldiers in the army, which serves to carry water or some other potable liquid while on duty. It is made in the form of a flask or bottle and is strapped to the waist belt or strung about the neck. The capacity is two or three pints.

CANTERBURY (kăn'tẽr-bẽr-ĭ), a city of England, 55 miles southeast of London, noted for its magnificent cathedral. The cathedral was founded in 596 by Saint Augustine. It was ravaged by the Danes in the 8th, 9th, 10th, and 11th centuries, but was enlarged to exceed that of London at the time of the conquest. It is 530 feet in length and 154 feet in breadth, and has a tower 235 feet high. The Canterbury Cathedral was long an important ecclesiastical place, but lost a part of its prestige with the murder of Thomas à Becket. It has excellent painted glass windows. The chambers are the finest in England and are beautified by several chapels. Near by the cathedral is King's School, founded by Henry VIII., in which David Copperfield attended. The city has railroad facilities, a library, and several fine institutions of learning. Population, 1921, 24,628.

CANTILEVER (kăn'tĭ-lĕv-ẽr), a bracket of wood, iron, or stone used in architecture for supporting balconies and cornices. The cantilever has been utilized in the construction of bridges, in which two brackets are built out, one from each side of the ravine to be spanned, to meet at the center without the support of intermediate piers. The first great bridge built in America in which the cantilever principle was used is the one which spans the Niagara River a short distance above the Whirlpool Rapids. It was completed in 1883 and is entirely of steel. The length is 910 feet; the two projecting arms or cantilevers are each 175 feet; and the truss span which they support is 175 feet long. The bridge is 245 feet above the water and is crossed by a double railway track. Another bridge of this class crosses the Saint John River, in New Brunswick. It is 813 feet long and the main span has a length of 477 feet. The Poughkeepsie Bridge, across the Hudson River, has five spans and is 6,767 feet long. The Quebec Bridge has a span of 1,800 feet, the longest single span in the world.

CANTON (kăn-tŏn'), an important commercial city and port in southern China. It is located in the province of Kwangtung, on the Si-kiang River, about 32 miles from the China Sea. The city is of great antiquity and is mentioned in history as early as 250 B. C. It became an important market and seaport in 700 A. D., and was long celebrated as a trading point for Arab voyagers. In the 16th century it was visited by the Portuguese and a hundred years later by the Dutch. England monopolized its commerce from the 17th century up to 1834, when trade with other European nations became important. In 1857 it was captured by the allied forces of French and English and was garrisoned by them until 1861, since which time it has been open to the commerce of all nations.

The city is surrounded by walls twenty feet thick and from twenty to forty feet high, with a partition wall dividing it into the old and new parts. The wall contains many gates, which are closed at night and open during the day. Many of the streets are tortuous and some are less than eight feet wide. In the old portion of the city are many Buddhist temples, about 200. The largest of these is located on Honam Island, covers seven acres, and is called the "Temple of the Ocean Banner." It is one of the most celebrated Buddhist temples, with fine ornamentations, and 175 priests. Another famous temple is situated in the western suburbs, called the "Temple of Five Hundred Gods," in which 500 statues are located to commemorate Buddha and his disciples. The city has remarkable examples of life upon the water, a large number of residences being constructed of boats that occupy a space of four or five miles on the river opposite the city. No less than 40,000 of these residences are in the city, and the population occupying them aggregates 200,000.

Canton has large industries for the manufacture of porcelain, paper, glass, silk, cotton goods, sugar, ivory carvings, lacquered ware, and utensils. It was the chief city for foreign commerce of China until 1850, when it was surpassed by Shanghai, but its annual imports and exports still aggregate about $40,000,000. Many foreign mercantile houses, among them German, French, British, and American, occupy the southwestern part of the city, and the consulates of foreign governments are also located in that portion. The religion of the Chinese in Canton is largely Buddhism. Education is provided for in elementary schools, and a number of institutions disseminate knowledge in the higher learning and the arts, especially sculpture and painting in the Chinese style. Population, 1922, 905,500.

CANTON (kăn'tŭn), a city of Illinois, in Fulton County, about 25 miles southwest of Peoria, on the Toledo, Peoria and Western and Chicago, Burlington and Quincy railroads. It has a growing trade in grain, coal, and merchandise. The manufactures include plows, brooms, machinery, marble products, tile, and flour. A fine high school is maintained. The city has a public library, waterworks, and gas and electric lighting. It was settled in 1832 and incorporated in 1849. Population, 1900, 6,564; in 1920, 10,928.

CANTON, a city in Ohio, county seat of Stark County, sixty miles southeast of Cleveland, on the Pennsylvania, the Wheeling and Lake Erie, and the Baltimore and Ohio railroads. It is surrounded by a fertile farming and stock-raising country, and in the vicinity are deposits of clays, limestone, and coal. The chief buildings include the post office, the county courthouse, the city high school, the Aultman Hospital, and the city hall. Nimisilla Park is a fine public resort. It has a large public library and several monuments, including one erected to the soldiers of the Spanish-American War and the fine monument dedicated to President McKinley in 1908. The manufactures include brick, tile, watches, roofing material, clothing, hardware, sweepers, machinery, agricultural implements, and railroad cars. It has an extensive trade in farm produce, merchandise, and machinery. The municipal improvements include sewerage, waterworks, gas and electric lighting, stone and asphalt pavements, and electric urban and interurban railways. It was first settled in 1805 and was incorporated in 1822. Canton was the home of William McKinley. Population, 1900, 30,667; in 1920, 87,091.

CANUTE (kȧ-nūt'), or **Knut,** King of Denmark and England, born about 995; died at Shaftesbury, England, in 1035. He succeeded his father, Sweyn, or Swein, ruler of the Danes and English, in 1014. At first he governed England jointly with Edmund, the Saxon ruler, but when the latter was assassinated, in 1017, he became ruler of the entire country. The first portion of his reign was unpopular because of his severity in enforcing the laws, but he soon exhibited evidences of mildness and justice. The general assembly restored English customs, and later equal rights and protection were guaranteed to both the English and Danish subjects, while many of the former received important public offices. Under his direction the government was the best experienced since the time of Alfred, and the people became friendly to him for his liberality, love of learning, and interest in song and ballad. He annexed Norway in 1028, placing Haco on the throne, and established supremacy in Scotland in 1031. At his death his eldest son, Sweyn, ascended the throne of Norway; the second son, Harold, that of England; and the third son, Hardecanute, that of Denmark.

CANVAS (kăn'vȧs), a kind of coarse cloth made of flax or hemp. It is used largely to make sails for ships. The strips are usually narrow; several are sewed together to make the large sails used on boats and ships. A similar cloth is used for tents and awnings, and a finer variety called *duck* is employed in making clothing for men and women. The canvas used by artists in painting is stretched on wooden frames the size of the picture desired. Its surface is made smooth by chalk and size, or white lead. The widths are from 28 to 94 inches.

CANVASBACK, a species of duck native to North America. It is about twenty inches long. The color is diversified. The male has reddish plumage on the head, the bill is nearly black, and the back and sides are grayish with sparse wavy lines, similar in appearance to the surface of coarse canvas. The female has more grayish plumage than the male and is somewhat smaller. They frequent the inland waters and estuaries of rivers, where they feed on roots and crustaceans, and visit fields in the spring and fall in search for grain. These birds are migratory, moving northward to breed the latter part of March, and are highly prized for their flesh.

CAOUTCHOUC (kōō'chōōk), an article used extensively in the arts. It is an elastic, gummy substance and is obtained from the juices of several species of trees found in South America. This product was first exported to Europe in the 18th century, and became useful in erasing pencil marks, bread crumbs having been previously used for that purpose. It is now employed largely in the manufacture of lead pencils, erasers, nonconductors of electricity, and many other purposes. Caoutchouc is of value in making waterproof fabrics; a patent for a process of this kind was granted to Samuel Piat in 1791. In 1823 Mackintosh was granted a patent on waterproof material known by his name, while Charles Goodyear invented the vulcanizing process by which caoutchouc is rendered as hard as horn. Soft vulcanized rubber is made by adding twenty-five per cent. of sulphur and heating to about 270°. In making hard vulcanized rubber or ebonite, fifty per cent. of sulphur is added and it is heated to 300°. See **India Rubber.**

CAPE ANN, a cape in the northeastern part of Massachusetts, 30 miles northeast of Boston. It is the eastern point of Essex County, and the name is generally applied to the whole rocky peninsula, which extends about ten miles into the Atlantic Ocean. This peninsula contains the towns of Rockport and Gloucester, which are connected by railway with Salem and other cities of the State. Valuable stone quarries are worked, and off the coast are extensive fisheries. Cape Ann is popular as a summer resort.

CAPE ARAGO, or **Gregory,** a cape of Oregon, at the south side of Coos Bay, on the west shore of Coos County. Near this cape is a lighthouse 84 feet above the sea.

CAPE BARROW (băr′ro̍), or **Point Barrow,** a cape in the Arctic Ocean, the most northerly point of Alaska. The United States government located a signal service station here in 1881, and near it is the village of Barrow, a whaling station.

CAPE BLANCO (blăn̠′ko̍), the name of three capes in Africa and one in North America. Cape Blanco, the most northerly point of Africa, is on the northern coast of Tunis and projects into the Mediterranean. Another cape of the same name is on the west coast of Morocco, and a third is on the western shore of the Sahara, near the boundary between the possessions of France and, Spain. Cape Blanco, in America, is the most westerly point of Oregon, south of the mouth of the Sixes River, thirty miles north of the mouth of the Rogue River. At the western extremity of the cape is a lighthouse 256 feet above the sea.

CAPE BRETON (brĭt′ŭn), an island of British America, at the northeastern end of Nova Scotia, to which it belongs. It is separated from Nova Scotia by the narrow Gut of Canso, about one mile wide, and has an area of 3,120 square miles. The coast contains a large number of bays, the most important of which is Bras d'Or, which forms an inland lake about fifty miles long and twenty miles wide. It is of much value for interior navigation. A canal has been cut to connect the lake with Saint Peter's Bay on the south coast, making it important as a connection with the Atlantic Ocean. The surface is rugged, but agriculture is carried on in the valleys and on the coast plains. The minerals consist of iron and coal, while the waters yield an abundance of fish. The principal exports are coal, timber, and fish. It belonged to France from 1632 to 1763, with the seat of government at Louisburg, then an important military post. Though taken by the British in 1745 it was not finally ceded by France until 1763. The business centers include Sydney, North Sydney, and Port Hood. Railroad lines connect the principal business centers with Nova Scotia and other portions of British America. For the purpose of local government it is divided into the four counties of Inverness, Victoria, Cape Breton, and Richmond. Population, 1922, 123,840.

CAPE CATOCHE (kȧ-tō′cha̍), the northeastern point of Yucatan, a state of Mexico. It was discovered by the Spaniards in 1517, and was the first landing place of the Spanish explorers on the American continent. This cape must be rounded in sailing from the Caribbean Sea to the Gulf of Campeche.

CAPE CHARLES, a cape of Virginia, the southern point of Northampton County, 25 miles northeast of Norfolk. It is at the northeast side of the entrance of Chesapeake Bay, and across the bay, almost directly south, is Cape Henry.

CAPE CLEAR, the southern extremity of Ireland, located about seven miles southwest of Baltimore. It is at the southern extremity of Cape Clear Island, which is about a mile wide and three miles long. The cape is a rocky promontory and rises 400 feet above the sea, and near it is a lighthouse 455 feet high.

CAPE COD, a peninsula extending from the southeastern part of Massachusetts into the Atlantic Ocean, forming Cape Cod Bay between its northern arm and the mainland. It was so named from the great abundance of codfish caught off the shores of the peninsula. It was first discovered May 15, 1602, by Bartholomew Gosnold, and was the landing point of the Mayflower on Nov. 9, 1620. The surface is largely barren, owing to its sandy soil, but it is populated and has railroad connection with several cities, including Chatham and Woods Hole. The peninsula comprises the whole of Barnstable County, of which Barnstable is the county seat. A canal extends across the narrow isthmus between Cape Cod Bay and Buzzard's Bay.

CAPE COLONNA (ko̍-lŏn′nȧ), a rocky cape of Greece, extending into the Gulf of Aegina, at the southern extremity of Attica. It is so named from the white marble columns of a temple of Minerva, which are the remains of that famous structure anciently erected on the summit of the cape.

CAPE COLONY, or **Province of the Cape of Good Hope,** a British colony in the southern extremity of Africa. It is situated between south latitudes 25° and 34° 50′, and east longitude 16° 25′ and 30°. The northern boundary is formed by German Southwest Africa, Bechuanaland, Orange River Province, and Natal. It is bounded on the southeast by the Indian Ocean and on the southwest by the Atlantic Ocean. The Orange River forms a large part of the northern boundary. Walfisch Bay, on the western coast of German Southwest Africa, is included in this province. The area is 276,759 square miles.

Description. The surface is diversified by a range of mountains trending nearly parallel to the southern coast. Along the coast and through the mountain ranges are belts of fertile land, and in the south central part is the plateau of Great Karroo, which has an average width of sixty miles. The surface rises gradually toward the interior, such as the Snow Mountains culminating in ranges from 6,000 to 8,500 feet high. These ranges include several elevated peaks, of which Compass, elevation 8,500 feet, is the loftiest summit. In the western part trend several ranges, including the Karre Bergen and the Roggeveld mountains. The Kathlamba Mountains are in the northeastern part and extend into Natal, where they are known as the Drakensberg Mountains. In the northern part along the Orange River, is a valley diversified more or less by fertile tracts and sandy and elevated regions. On the southern shore is Algoa Bay, the principal inlet. False Bay and Walkers Bay are near the southern extremity, and Saint Helena Bay is in the western part. It may be said that the coast as a whole is regular and characterized by few indentations.

The drainage may be divided into three sections, including the rivers that flow into the Indian Ocean, those that discharge into the Atlantic, and the Orange River and its tributaries. The drainage into the Indian Ocean is by numerous small rivers, none of which is navigable. They include the Breede, Couritz, Gamtoos, Great Fish, and Great Kei. Most of the drainage into the Atlantic is carried by the Olifants River. Among the tributaries of the Orange River are the Hartebeeste and the Ongaars. The plateau of Great Karroo has a number of dry basins in which water gathers at some seasons of the year, and there are no lakes aside from a number of lagoons in the upper course of the Hartebeeste River.

The climate is healthful, being temperate in the southern part and semitropical in the northern section. Rainfall is insufficient to produce a large variety of vegetation in the higher regions, but in the moderately elevated sections it is abundant. Irrigation is used extensively for the improvement of lands for cultivation and pasturage, and by means of it large areas have been made productive. Snow covers the higher summits a large part of the year. At Cape Town the average temperature is 65°.

Flora and Fauna. Marked differences in elevation and in the character of the soil account for vegetation being considerably diversified. The coast region has many varieties of useful wood, such as palms, ironwood, and many species of hard timber. The acacia, aloe, and many bulbous plants thrive in the more elevated regions, especially in the vicinity of the Great Karroo. Many species of wild animals were abundant before the territory was occupied by Europeans, including the giraffe, rhinoceros, lion, elephant, and hippopotamus, but all of these have practically disappeared. Those still found include the hyena, jackal, and many species of monkeys. Birds are numerous, and fish are abundant in the streams and off the coast.

Minerals. Mining is an important industry. The diamond fields, situated in West Griqualand, are the most important in the world. The exportation of this product aggregates about $30,000,000 per year, and the total value of the output from 1867 to 1926 is placed at $575,000,000. Kimberley, between the Vaal and Modder rivers, is the center of the diamond fields. Copper is mined chiefly in Namaqualand, and coal is found abundantly, the principal mines being in the Stromberg Mountains. Other minerals include gold, lead, iron, and salt.

Industries. Mining ranks as the chief industry, but much attention is given to mixed agriculture. A large part of the country is well adapted to grazing, hence the rearing of horses, sheep and cattle is carried on extensively. Many large ranches are used in sheep raising, some including 15,000 acres. Ostriches are grown for their feathers, the number of these animals being about 300,000. Considerable revenue is secured from the growing of goats, chiefly the Angora, and mules and swine. Cereals are cultivated in the regions having sufficient rainfall and where irrigation is possible, and they consist chiefly of wheat, rye, barley, maize, and oats. Tobacco, hay, and fruits are grown profitably.

Manufacturing is limited to the products used in home consumption. They embrace chiefly flour, leather, clothing, tobacco, butter, and spirituous liquors. Transportation is favored by an extensive coast line and by numerous railways in all the sections where settlements are well established. Cape Town, the southern terminus of the Cape-to-Cairo Railway, is important as a seaport and has transportation facilities by rail to Kimberley, Bloemfontein, Johannesburg, and other cities of the interior part of the British possessions in Southern Africa. A number of railways extend inland from the southeastern coast, including lines from East London and Port Elizabeth, the chief seaports on the Indian Ocean. Fewer lines have been constructed in the northwestern section, but connections are made with the interior from Port Nolloth, a seaport on the Atlantic, about 50 miles south of the mouth of the Orange River. Foreign trade is largely with Great Britain and Holland, and the exports exceed the imports. The export trade is chiefly in minerals, hides, wool, and ostrich feathers, and the imports are principally foodstuffs, textiles, hardware, and machinery.

Government. The Governor of the province is high commissioner for the British possessions in South Africa. He holds office under appointment by the crown and is assisted by a ministry, which consists of the prime minister and treasurer, colonial secretary, attorney general, secretary of agriculture, and commissioner of public works. Two houses make up the Parliament; these are known as the Legislative Council and the House of Assembly. Members in the former are elected for seven years and are presided over ex officio by the chief justice, and members in the latter are elected for five years. Both the English and Dutch languages are used in the government. The Supreme Court is presided over by a chief justice and eight associate judges. For the purpose of local government, the country is divided into districts and municipalities, and these are governed largely by officials elected by the people. No distinction is made on account of race or color in extending the right of suffrage, and the qualifications for voters is based chiefly on citizenship.

INHABITANTS. The inhabitants include a large number of natives and their descendants, among them the Kaffirs, Bechuanas, Malays, and Hottentots. Most of the Europeans are Dutch or the descendants of Dutch settlers, and these are known as *Afrikanders.* About one-fourth of the people are whites, nearly all of whom are Protestants. The communicants of the different protestant denominations number about 975,000, while the Roman Catholics include about 25,500, the Mohammedans about 15,500, and the Jews about 3,250. Support is given to schools by the government of the colony, but attendance is not compulsory and the rate of illiteracy is quite large, even among Europeans. The superintendent general has charge of the department of public instruction, which has general supervision of educational affairs, and local inspection is provided by deputies and officials elected by the people. Several institutions of higher learning are maintained, at the head of which is the University of the Cape of Good Hope. Cape Town, the capital and largest city, is near the southern extremity, on Table Bay. Kimberley, the center of the diamond fields, is near the Orange River, and Port Elizabeth, the second seaport, is on Algoa Bay. Other cities of importance include East London, Grahamstown, Paarl, and Port Nolloth. Population, 1921, 2,583,024.

HISTORY. The region included in Cape Colony was first visited in the 15th century by Dias, a Portuguese navigator, who doubled the Cape of Good Hope. Vasco da Gama landed on its shores in 1497, and trade was developed to some extent the following century by English and Dutch merchants. The colony was first organized in 1652 by the Dutch East India Company and was controlled by that organization until 1795, when it was annexed by the British, but was restored to the Dutch in 1802. Owing to trade difficulties, contentions soon arose between the colony and the British. It was annexed to England in 1806 with the understanding that the inhabitants should preserve all the rights and privileges enjoyed by them prior to that time, and since then it has been under British control, though it was not recognized as British territory until the peace treaty of 1815.

The history of Cape Colony is intermingled with accounts of many wars with the Kaffirs and other tribes. Many Dutch burghers became dissatisfied with British rule about 1836, and emigrated to the region now included in Natal, Transvaal Province, and Orange River Province. Immigration has been quite steady since the discovery of diamonds at Hopetown in 1867. In 1910 it was joined with Natal, Transvaal, and Orange Free State to form the Union of South Africa. The province is prosperous, showing a healthful growth in commercial and social affairs. The colored population is increasing faster than the whites, owing to the extensive employment of this class of laborers and the peculiar adaptation of climatic conditions to the development of the races native to the country.

CAPE COMORIN (kŏm'ŏ-rĭn), the most southern extremity of India, in the Travancore. Comorin Peak, the highest elevation, is about eighteen miles north, and within a short distance of the cape is the town of Cape Comorin, made up largely of fishermen's houses and several ancient temples.

CAPE DIAMOND, the extremity of a promontory in Canada, at the junction of the Saint Charles and Saint Lawrence rivers. It rises about 300 feet above the river and on it stands the citadel of Quebec. West of it are the plains of Abraham, where Wolfe with a British force defeated the French under Montcalm in 1755.

CAPE FAREWELL, the southern extremity of Greenland, near the entrance to Christian Sound. The locality is dangerous for navigators on account of the strong currents which flow around Greenland into Davis Strait.

CAPE FEAR, a cape in North Carolina, at the southern extremity of Smith Island, near the mouth of the Cape Fear River. Currents and breakers make the surrounding waters dangerous to navigation.

CAPE FEAR RIVER, a river of North Carolina, formed by the Hawk and Deep rivers, which unite in Chatham County, near the central part of the State. It has a general course toward the southeast and discharges into the Atlantic Ocean, near Smith Island. The principal towns on its banks are Wilmington, Elizabethtown, and Fayetteville. It is about 250 miles long and is navigable to Fayetteville, about 120 miles.

CAPE FINISTERRE (fĭn-ĭs-târ'), or **Land's End,** a cape in the northwestern part of Spain, in the government of Coruna. Near it were fought two naval battles between the English and the French, in 1747 and in 1805, in which the former were victorious.

CAPE FLATTERY, a cape in the State of Washington, the extreme western point of the United States. It is located on the Strait of Juan de Fuca, at its southern entrance. About half a mile distant, on Tatoosh Island, is a lighthouse 155 feet above sea level.

CAPE GIRARDEAU (jē-rär-dō'), a city of Missouri, in a county of the same name, fifty miles above Cairo, Ill., on the Saint Louis and San Francisco and other railroads. It is located on the Mississippi River in a fertile farming country, and is the seat of a brisk trade in cotton, cereals, and merchandise. The manufactures include flour, machinery, and earthenware. It is the seat of a normal school, Saint Francis Hospital, Saint Vincent's College, and the Convent of the Sisters of Loretto. Population, 1900, 4,815; in 1920, 10,252.

CAPE HAITIEN (hē'tē-ĕn), or **Haytien,** a city of Haiti, on the northern coast. It has a safe and spacious harbor, and inland are a number of elevated mountain peaks. The streets are well platted and improved, but the buildings are low. It has an important export trade in coffee, sugar, cacao, and logwood. An earthquake destroyed most of it and killed several thousand people in 1842. Population, 1922, 29,150.

CAPE HATTERAS (hăt'tẽr-ȧs), a cape at the eastern extremity of North Carolina, projecting into the Atlantic Ocean from Hatteras Island, which is separated from the mainland by Pamlico Sound. Many shoals abound near it, and storms and gales acting with the Gulf Stream make navigation dangerous. A lighthouse 191 feet above the sea is maintained near the outer point.

CAPE HENLOPEN (hĕn-lō'pen), a cape at the south side of the entrance to Delaware Bay, on the east coast of Delaware. It is about twelve miles southwest of Cape May, the nearest point in New Jersey, across Delaware Bay. The lighthouse maintained here is 126 feet above the sea.

CAPE HENRY, a cape of the United States, on the eastern coast of Virginia, at the south entrance to Chesapeake Bay, across which is Cape Charles. It has a sandy beach and a lifesaving station. The lighthouse is 157 feet above sea level.

CAPE HORN, the southern point of Horn Island, an island of the Archipelago of Tierra del Fuego, noted as the southern extremity of South America. The headlands consist of precipitous cliffs 600 feet high. It was discovered by Sir Francis Drake in 1578. The Dutch navigators Lemaire and Schouten first doubled it in 1616, and named it from Hoorn, their native town. Steamboats now sail through the Strait of Magellan, thus gaining considerable advantage over the old route around the cape.

CAPE LISBURNE (lĭs'bûrn), a point of land extending into the Arctic Ocean from the northwestern coast of Alaska. Near it are important coal mines, which furnish a supply of fuel for whaling and explorations in the Arctic Ocean. A strong current flows past it from Bering Strait.

CAPE LOOKOUT, a cape of North Carolina, about eighty miles southwest of Capt Hatteras. It has a lighthouse 156 feet above the sea.

CAPE MAY, a watering place and health resort on the point of land known by the same name. It is located at the southern end of New Jersey, in Cape May County, near the entrance to Delaware Bay, 81 miles by railroad from Philadelphia. The transportation facilities are by the West Jersey and Seashore and the Atlantic City railroads. Tourists find recreation in fishing in the beautiful lagoons toward the inland, and in bathing and driving. Extensive hotel accommodations and many summer villas are located on the beach. Cape May has a number of industries, such as fish and oyster canning and gold beating, but it is more important as a resort for health and pleasure. Population, 1905, 3,005; in 1920, 2,471.

CAPE MENDOCINO (mĕn-dô-sē'nô), the most western point of California, in Humboldt County. It is a high promontory, 428 feet above the sea, and has a first-class lighthouse.

CAPE OF GOOD HOPE, an important promontory near the southwestern extremity of Africa, next to Cape Agulhas, the most southern point of the continent. It is the end of the Table Mountain, which recedes inland and rises 3,585 feet above the level of the sea, while the promontory rises nearly 1,000 feet above the sea. Near it is a British naval station. It was discovered by Bartholomew Diaz in 1486 and named Cape of the Storms, but its name was changed to Cape of Good Hope by John II. of Portugal. This name was applied because it marks the change of direction in sailing from south to east on the voyage from Europe to India. The completion of the Suez Canal has greatly diminished its commercial importance.

CAPE PALMAS (päl'mȧs), the southern extremity of Liberia, Africa. It is near the place where the colony of Negroes from the United States landed in 1834.

CAPE NOME (nōm), a cape of Alaska, near the city of Nome, extending into Norton Sound. It is noted for the rich deposits of gold in the sand near the sea coast.

CAPE PRINCE OF WALES, a cape of North America, the extreme western point of that continent and of Alaska. It is opposite East Cape in Siberia, and between the two points is the narrowest water which separates the two continents. Dangerous shoals are located north of it, but toward the south is a deep sea.

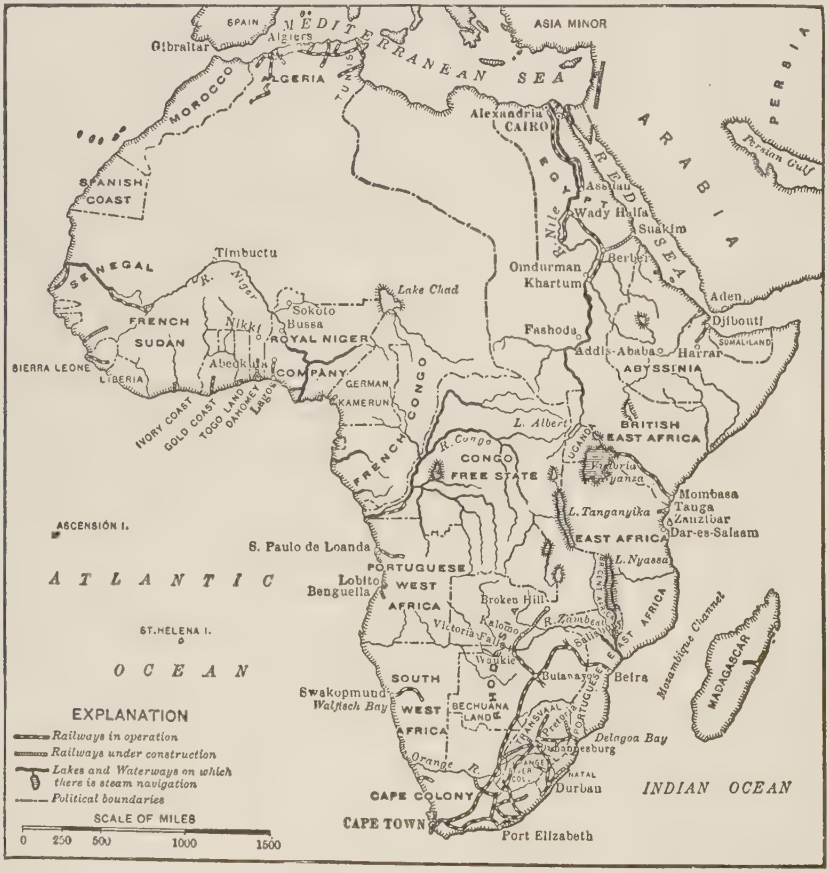
CAPE RACE, a cape at the southeastern extremity of Newfoundland, extending into the Atlantic Ocean. It has a revolving lighthouse 180 feet above the water.

CAPERCALLY (kā'pẽr-kăl-lȳ), or **Capercailzie,** a species of grouse native to Europe, and quite generally known as *cock of the wood.* It has brownish-black plumage, a small scarlet patch of naked skin near the eye, and weighs about ten pounds. Its food consists largely of berries and insects, and it frequents the boughs of tall trees. These birds are highly favored for their flesh and may be easily domesticated. They are native to both Asia and Europe, and are found chiefly in the forests of regions not generally settled. Quite a large number inhabit the northern part of Scandinavia, Russia, and the timbered sections of Siberia.

CAPERNAUM (kȧ-pẽr'nȧ-ŭm), an ancient city of Palestine, in Galilee, on the northwestern coast of the Sea of Galilee. Jesus made his home at Capernaum after leaving Nazareth (Matt. iv., 13), and it was the scene of many of his miracles and discourses. It had a synagogue, a customhouse, and a Roman garrison.

Capernaum was the home of Andrew, Matthew, and Peter, and it is related that Matthew was at the custom station when called to be an apostle.

CAPERS, William, clergyman, born in Saint Thomas Parish, S. C., Jan. 26, 1790; died Jan. 29, 1855. He studied at the South Carolina College and in 1809 entered the ministry of the Methodist Church. He was a delegate to the Wesleyan conference in England in 1828, and later became professor of Christianity in Columbia College, S. C. For some time he did efficient work as a missionary among the Creek Indians in Georgia. In 1846 he was chosen bishop of the southern division of the Methodist Church. He published a number of journals devoted to Christianity and wrote "Catechisms for Negro Missions."


SPAIN
MEDITERRANEAN SEA
Gibraltar
Algiers
ALGERIA
TUNIS
MOROCCO
SPANISH COAST
ASIA MINOR
PERSIA
ARABIA
Persian Gulf
Alexandria
CAIRO
EGYPT
R. Nile
Assuan
Wady Halfa
RED SEA
Suakim
Berber
Omdurman
Khartum
Aden
Djibouti
SOMALILAND
Harrar
Fashoda
Addis-Ababa
ABYSSINIA
Timbuctu
SENEGAL
R. Niger
Lake Chad
Sokoto
Bussa
Nikki
FRENCH SUDAN
ROYAL NIGER COMPANY
SIERRA LEONE
LIBERIA
Abeokuta
IVORY COAST
GOLD COAST
TOGO LAND
DAHOMEY
Lagos
GERMAN KAMERUN
FRENCH CONGO
L. Albert
UGANDA
BRITISH EAST AFRICA
R. Congo
CONGO FREE STATE
Victoria Nyanza
Mombasa
Tauga
Zanzibar
Dar-es-Salaam
L. Tanganyika
EAST AFRICA
L. Nyassa
BR. CENT. AFRICA
ASCENSIÓN I.
S. Paulo de Loanda
PORTUGUESE WEST AFRICA
Lobito
Benguella
ATLANTIC OCEAN
ST. HELENA I.
Broken Hill
R. Zambesi
Kalomo
Victoria Falls
Salisbury
EAST AFRICA
Wankie
RHODESIA
Bulawayo
PORTUGUESE
Beira
Mozambique Channel
MADAGASCAR
Swakopmund
Walfisch Bay
SOUTH WEST AFRICA
BECHUANA LAND
TRANSVAAL
Pretoria
Johannesburg
Delagoa Bay
ORANGE RIVER COL.
NATAL
Orange R.
Durban
CAPE COLONY
CAPE TOWN
Port Elizabeth
INDIAN OCEAN
EXPLANATION
Railways in operation
Railways under construction
Lakes and Waterways on which there is steam navigation
Political boundaries
SCALE OF MILES
0
250
500
1000
1500

CAPE-TO-CAIRO RAILWAY.

CAPE SABLE, the name of two capes in North America, one in Nova Scotia and one in Florida. Cape Sable, in Nova Scotia, is on Cape Sable Island, in Shelburne County, and off its shore are important fisheries. Cape Sable, in Florida, is at the most southern point of the State and of the United States.

CAPE SAINT VINCENT (sānt vĭn'sent), a headland at the southwestern extremity of Portugal, in the province of Algarve. It is noted for the victory of the British navy under Sir John Jervis over a Spanish fleet on Feb. 14, 1797.

CAPE SAN LUCAS (sän lōō'kȧs), the most southern point of Lower California, in Mexico. It is a rocky promontory of volcanic origin, almost directly west of Mazatlan, Mexico.

CAPE SAN ROQUE (rō'kȧ), a cape in the northeastern part of Brazil, in the state of Rio Grande do Norte, north of the city of Natal.

CAPETIAN DYNASTY (kȧ-pē'shan dī'nas-ty̆), the third dynasty of French kings. It was founded by Hugh Capet in 987, at which time he was elected king by the aid of the clergy, and succeeded the last king of the Carlovingians. Charles IV., who died in 1328 without male issue, was the last of the Capetian kings, and was succeeded by his cousin Philippe, the founder of the house of Valois. France became stronger during the reign of the Capets, since they added fiefs to the royal domain and centralized the national government.

CAPE-TO-CAIRO RAILWAY, a trunk line projected in Africa to furnish a direct means of transportation from Alexandria to Cape Town. It is the first direct transcontinental railway projected to extend from north to south, and will furnish an admirable line by which to cross the equator. It was first proposed by Cecil Rhodes, who looked upon it as an avenue by which British commerce and dominion could be enlarged. The cost was originally estimated at $60,000,000 and it was thought possible to complete it by 1928, but the capital required will be more than double that sum and more time will be necessary.

The accompanying map shows the waterways and railroads in Africa in 1923. From Alexandria to Khartum, a distance of 1,300 miles, the line was built by the Egyptian government and has been in operation several years. The southern extension from Cape Town to Bulawayo, about 1,600 miles, is entirely in British territory. From Bulawayo lines have been built to Salisbury and Broken Hill, and the latter of these will be constructed along the east side of Lake Tanganyika, through Tanganyika Territory, Uganda, British East Africa, and thence along the Nile to Khartum. It is likely that for some years advantage will be taken of navigation on lakes Nyassa, Tanganyika, and Victoria Nyanza. A line already extends through British East Africa, from Mombasa to Lake Victoria Nyanza, which will be a feeder to the main railway. The length of the Cape-to-Cairo Railway is 6,600 miles. By looking over the map it will be seen that railroad construction in Africa is limited to the territory settled more or less by Europeans, but this line will extend fully 2,000 miles through a region totally undeveloped.

CAPE TOWN, the capital and seat of government of Cape Colony, at the head of Table Bay, on the north side of the peninsula formed by Table Mountain, thirty miles north of the Cape of Good Hope. It is the southern terminus of the Cape-to-Cairo Railway. The town was first built of poorly constructed houses with flat roofs, whitewashed on the outside. Later a site was platted in which the streets intersect each other at right angles, and many modern edifices have been constructed. It is now an important seat of commerce and manufactures. The modern facilities include sewerage, waterworks, electric and gas lighting, electric street railways, and extensive telephone and telegraph connections. The Parliament building, the seat of justice, the public museum, the gallery of fine arts, and the public library are among the most important structures.

Cape Town has a fine school system, a number of high school buildings, and several colleges and institutions of higher learning. The university, founded in 1873, has an attendance of 700 students. It is beautified by a number of parks, paved streets, and boulevards. The trade from the interior and its foreign commerce are alike extensive. What the city lost by the construction of the Suez Canal has been more than regained by the discovery of large deposits of gold and diamonds in the interior and the building of railroad lines. Among the industries are extensive machine shops, flouring mills, tanneries, woolen mills, and factories producing implements, hardware, and machinery. Cape Town was founded by the Dutch in 1652 and has been a possession of England since 1806. Population, 1921, 67,170.

CAPE VERDE (vĕrd), the most westerly cape on the west coast of Africa, between the Gambia and the Senegal rivers. The Portuguese discovered it in 1445, and it was so named from a grove of baobab trees, which gave the locality the appearance of a white coast.

CAPE VERDE ISLANDS, a group of fourteen islands belonging to Portugal, located about 320 miles west of Cape Verde, Western Africa. The islands have an area of 1,480 square miles. They are of volcanic origin and have at least one active volcano, located on the island of Fogo. The interior is elevated, while the coast is level and exceedingly fertile. The inhabitants consist largely of descendants from the Portuguese, whose language is official and is taught in the public schools. Among the leading products are indigo, tobacco, sugar, cotton, coffee, millet, chemicals, and tropical fruits. Rainfall is greatest from August to November, but droughts are not uncommon during the growing season. Among the domestic animals are goats, poultry, asses, and cattle. Roman Catholic is the state religion. The larger share of the trade is with Portugal. The governor is appointed by the King of Portugal and resides at Praya, the capital of the islands, which is located on Santiago, the largest of the group. Porto Grande, on São Vincente, is an important coaling station. The Cape Verde Islands were discovered by the Portuguese in 1450, and have since been under their control. Population, 1923, 147,665.

CAPE WRATH, a promontory at the northwestern extremity of Scotland, in Sutherlandshire. It consists of rocky cliffs, mostly of gneiss, which tower more than 500 feet above the sea. A lighthouse stands on the highest point and may be seen at a distance of twenty-five miles.

CAPILLARIES (kăp'ĭl-lâ-rȳz), the vessels of hairlike minuteness that form the connections between the extremities of the arteries and the beginning of the veins. The arteries form channels for the blood to pass from the heart and become smaller continuously until they merge into the capillaries, tubes from $\frac{1}{500}$ to $\frac{1}{1,000}$ of an inch in diameter. The flow in these small vessels is about $\frac{1}{80}$ of an inch per second in the systematic and $\frac{1}{5}$ of an inch in the pulmonic circulation. The flow is constant, equable, and regular. They fit closely to the veins, which unite into larger and larger channels, as streamlets do to constitute a river, and carry the blood back to the heart. In the capillaries of the lungs, the blood receives oxygen and gives up carbonic acid. The capillary action can be easily seen in the foot of a frog by the use of the microscope.

CAPILLARITY (kăp-ĭl-lăr′ĭ-tў), the branch of physics which treats of the properties of liquid surfaces. The tendency of the surfaces of all liquids is to contract, which is seen in the spherical form of falling drops and in the effort required to blow a soap bubble. When a tube of fine bore is lowered into a liquid, the fluid surrounding the walls of the tube rises above the level of the liquid. This is more noticeable in small than in large tubes, and can be observed very easily by placing small tubes or straws into water slightly colored with ink. The difference in the surface results from the difference between the cohesion of the liquid molecules for one another and their adhesion to the walls of the capillary tube. The outer surfaces of a liquid which wets a capillary tube rise, because the adhesion between the liquid and the tube draws or attracts it toward the walls of the tube. A liquid which does not wet the capillary tube is depressed at the outer surfaces, because the cohesion of the liquid draws it away from the walls of the tube. Water and mercury may be used in making experiments of this kind, since water wets the walls of a tube, hence the outside parts rise and the surface of the liquid is concave; and mercury does not wet the tube, hence the effect is reversed and the surface of the mercury is convex. Oil rises in the wick of a lamp through the capillarity of the spaces between the strands. In the same way plants absorb moisture from the air and the soil by their foliage and roots, and the sap rises in them through the capillarity of their tissues.

CAPITAL (kăp′ĭ-tal), in economics, the portion of wealth which is employed for the further production of wealth. It is sometimes defined as that portion of stock which the owner expects to convert into revenue. Writers usually divide capital into two classes, known as *fixed* and *circulating* capital. Fixed capital is a kind that is used only once in the fulfillment of its purpose, such as machinery. In this form it represents a certain amount of money invested, which will not be used a second time, since the machinery is supposed to be employed in the prosecution of a trade or business until it is worn out and must be replaced by new machinery. On the other hand, circulating capital consists of those forms of wealth which require renewing after having served a certain time for a specified purpose, such as a loan made for a definite time or an investment in land.

The nature of modern business enterprises differs very materially from those of society in the primitive state. Then it was thought that each individual should pursue a business and furnish practically all the capital, hence a laborer was skilled to the extent that he could complete almost the entire product without relying upon any one else. With the invention of modern machinery, capital has become invested very largely in fixed forms, and now the laborer is skilled more particularly to do certain parts of the work necessary to complete a commercial product. This *division of labor,* as it is called, has greatly revolutionized modern commerce by making labor more intelligent and skillful. However, it was long thought that every new machine invented would throw a certain per cent. of laborers out of employment, and thus deprive them of their means of support. This is shown in the invention of the harvester, which, with the aid of one man and two horses, does the work which formerly required four or five men. The invention of machinery to manufacture cotton is another illustration, and the inventors of these machines were treated violently by the laborers who considered them and their inventions highly detrimental. However, these and other inventions that might be mentioned, instead of having a harmful effect, have caused more laborers to be employed and at the same time have greatly improved the character of the product.

The *management* of capital may be rightly considered a theme of much importance. Modern business methods have greatly concentrated the management of large interests in the hands of a few, and the tendency has been for the larger institutions to absorb or displace the smaller ones. This may be seen clearly in the management of railroad business, both in Canada and the United States, where the smaller lines have been largely absorbed by the companies having control of trunk and transcontinental railways. The former management of smaller railways has given way to the management of systems, such, for instance, as the great systems of the New York Central lines, the Pennsylvania lines, and the lines of the Canadian Pacific. In England many of the public utilities have come under the ownership of municipalities and of the government, and in America the tendency is manifestly toward municipal ownership of large properties, such as lighting plants and rapid transit systems, which are now operated generally by the capital of private individuals or corporations. It is quite apparent that the laboring class of people feel favorable to public ownership, at least to a very large extent, and that they look upon the private ownership of large utilities as a centralization of power in the hands of corporations that control them to the detriment of the industrial classes. See **Money.**

CAPITAL PUNISHMENT, in criminal jurisprudence, the infliction of the penalty of death upon conviction of a high crime. In early history it was the mode of punishment for felonies of all kinds, and all primitive people regarded it as the best remedy to induce observ-

STATE CAPITOL AT ST. PAUL MINN

STATE CAPITOL AT AUSTIN, TEXAS

pp. 475)

ance of the law and for the prevention of crimes. A wider study of the causes of crime, including heredity and environment, has led to the conclusion that this mode of punishment is not the best means to overcome criminal conduct, although it is held by all governments that the severity of the punishment of crime should be based upon the nature of the crime committed. The Grecian scholars, Plato and Protagoras, favored the retention of capital punishment on the ground that it tends to deter men from committing the crime of murder, while others maintained positions diametrically opposed to this view.

Capital punishment was inflicted in early history for desecration of the Sabbath, cursing, idolatry, witchcraft, incest, and disobedience to parents, as well as murder. The Anglo-Saxons made such trivial offenses as robbing a rabbit warren, cutting down a tree or arbor, and offenses against the revenue acts capital crimes, but the theory of law was more severe than the practice. This is seen by the fact that the early laws contained 200 offenses punishable by inflicting this severe penalty, while it was inflicted upon persons guilty of committing only 25 of them. Sir James Mackintosh and others, about 1820, secured a repeal of the early English laws and confined the punishment by death to its present limits.

In Europe capital punishment is prescribed generally for persons guilty of murder, but it is rarely inflicted. The death penalty was abolished in Holland in 1870 and in Rumania and Portugal in 1864, while other countries have followed in the same course toward modifying the penalty for capital crimes. Many countries have laws whereby the form of punishment can be *commuted* to some other form; as, for instance, in Sweden only three persons were executed out of thirty-two sentenced to death in recent years. For the same length of time 484 persons were sentenced to death in Germany, but only one was executed; ninety-four in Denmark, only one executed; and 248 in Bavaria, only seven executed. This is the proportion usually maintained in the civilized countries.

In the United States, capital punishment is inflicted only in cases of murder, but in a few of the states it is extended to rape. In some of the states life imprisonment is the severest form of punishment, while in others this form may be substituted by the Governor in place of capital punishment. The form of execution is hanging in most countries, but in others beheading is the usual mode. The newer method adopted in New York, Ohio, and several of the states is that of electrocution. In the armies of the world capital punishment is usually inflicted by shooting or hanging for conviction as a spy or an aggravated form of desertion. Many societies have been organized and are now flourishing that have for their object the abolition of capital punishment, claiming that this form often induces crime, while life imprisonment and other severe forms akin to it are much more fruitful in securing obedience to law and regard for the life and property of others.

CAPITALS, the upper-case letters used in printing and writing. Each language has its peculiarities in the use of capital letters, and in some there is a difference of opinion upon the rules that should govern, hence individual scholars differ in their views as to where to employ them. In English the general rule is to begin all proper names, the first word of every sentence, the first word of each line of poetry, adjectives derived from proper names, and the names of deities with capital letters. The days of the week and of the month, the titles of books, the names of institutions, and the personal pronouns relating to God are capitalized. When an adjective directly precedes the name of a place it is usually capitalized, as Central Europe. Specific events, such as the French Revolution, are capitalized. However, there are differences of opinion for capitalization in English, hence the rules published are numerous and differ very materially. Every noun begins with a capital letter in the German, which was formerly the style used by English writers, and this system has many advantages over those now in vogue in many countries. Such a system simplifies and leaves no question as to propriety in capitalization, the test being in determining the part of speech.

CAPITOL (kăp'ĭ-tŏl), the name applied to the main government building in which the legislative body of a State or Nation holds its sessions and the public business is transacted, located at the capital city. The name is from the Roman citadel known as the Capitol, which stood on Capitoline Hill, one of the seven hills of Rome. It was planned by Tarquinius and destroyed during the civil wars in the time of Sulla, but was rebuilt by the Senate on a larger plan. It contained an equestrian statue of Marcus Aurelius, the "Capitoline Venus," and "The Dying Gladiator."

In the United States, each State has a capitol building, of which the finest are at Albany, N. Y., and Austin, Tex. The corner stone for the national capitol was laid Sept. 18, 1793, at Washington, D. C., by George Washington. In 1800 the north wing was completed, and in 1808 the south wing, and both were greatly damaged by the British in 1814. In 1818 part of the foundation for the main building was laid, and the whole was completed in 1827. President Fillmore laid the corner stone for the south extension July 4, 1851. It was completed in 1857. The length of the entire building is 751 feet; breadth, 324 feet. It covers three and a half acres. The diameter of the dome is 136 feet and the height is 308 feet. The cost of the entire building was $15,000,000.

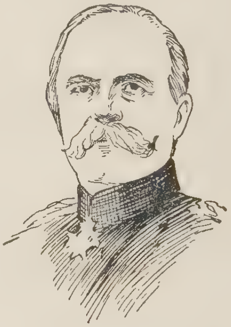
CAPITOLINE HILL (kăp'ĭ-tô-līn), the name often applied to the Tarpeian Hill, one of the seven hills of ancient Rome. On it a temple or capitol was built to Jupiter. The first foundations were laid by Tarquinius Priscus about 600 B. C., but it was not completed until after the republic was established. In 83 B. C. it was destroyed by fire and was rebuilt by Sulla, but was again destroyed in the civil wars. Vespasian rebuilt it in 69 A. D., but it was again destroyed in the reign of Titus, and was rebuilt with great magnificence by Domitian in 80 A. D. Emperor Augustus donated 2,000 pounds of gold to decorate its roof, and the Roman consuls bestowed great fortunes on it. The interior was decorated with shields of solid silver and the thresholds were of brass. On the same hill were other buildings and a library. All parts of Capitoline Hill were decorated with statuary, and in the interior of the capitol were beautiful productions of sculpture and painting. In 387 B. C. the Capitoline games were introduced to commemorate the deliverance from the Gauls, and after a lapse of interest they were revived by Domitian in 86 A. D. The modern structure is known as the Campidoglio, and was erected on the site of the capitol by Michael Angelo soon after 1536. It contains the palace of senators. In the hall of the illustrious men are busts of ninety-five famous Greeks and Romans, and in the hall of the emperors are sculptures of eighty-three emperors and empresses, while other interesting busts, statues, and pictures constitute a most wonderful collection of value and beauty.

CAPPADOCIA (kăp-pȧ-dō'shē-ȧ), an ancient province of Asia Minor, most of which is now included in the Turkish province of Karaman. It was conquered by Cyrus and belonged to Persia. After the time of Alexander the Great, it became an independent kingdom and was ruled as such until 17 A. D., when Tiberius made it a province of Rome. Much is said of this section of Asia Minor in Christian literature, and it is recorded in the first epistle of Saint Peter that the Cappadocians were converted to Christianity.

CAPRI (kä'prē), a famous and beautiful island in the Mediterranean, near the entrance to the Bay of Naples. It is two miles wide and five miles long, rising to an elevation of 1,900 feet above the sea. The island is remarkable for its richness in fertile soil, beauty of scenery, historic interest, and ancient ruins. The last seven years of Emperor Tiberius were spent on this island amid riotous and voluptuous living. The present inhabitants engage in fruiting, trading, and the culture of vineyards and orchards. In the west end is the town of Anacapri and in the eastern part is Capri. A flight of 535 steps has been cut in the rocks to reach the former. Capri, the capital, has a population of 4,220 and the island, 6,252.

CAPRICORN (kăp'rĭ-kôrn), the tenth sign of the zodiac (q. v.), and the name of a southern constellation. The latter was represented on ancient monuments by the figure of a goat, or as having the fore part of a goat and the hind part of a fish. The ancients celebrated it as the harbinger of success. The two largest stars are of the third magnitude, hence it does not rank as a constellation of much brilliancy. The Tropic of Capricorn is the southern boundary of the Torrid Zone, at which the rays of the sun are vertical once a year, at noon, usually the 21st day of December.

CAPRIVI (kä-prē'vē), **Georg Leo, Count von,** successor of Prince Bismarck as chancellor of Germany, born at Charlottenburg, Germany, Feb. 24, 1831; died at Skyren, Feb. 6, 1899. He was educated in the University of Berlin. In 1849 he entered the Prussian army and served in the war with Austria in 1866, in which he distinguished himself. He fought throughout the war with France in 1870-71, and became major general in 1877. He was given command of the third army division in December, 1882, and was at the head of the admiralty from 1883 to 1888. In 1890 he was appointed by William III. as successor to Prince Bismarck, in which capacity he negotiated commercial treaties with Austria, Italy, and Belgium in 1891, and secured the passage of the army bill of 1893. The last mentioned measure provided for two years' service in the infantry and an increase of the strength of the army on a war footing to 479,229 men. Caprivi belonged to the order of the Black Eagle and was made a count in 1891. He resigned the chancellorship on account of questions relative to the repression of socialism in 1894, and was succeeded by Prince von Hohenlohe.



GEORG LEO CAPRIVI.

CAPSICUM (kăp'sĭ-kŭm), a genus of plants native to tropical America, from which four varieties of cayenne pepper are obtained. These plants belong to the nightshade family and are not related to those that yield the real pepper. About ninety species of capsicum have been studied. The leaves are simple and the fruit is a berry with many seeds. The berry in all the species has an inflated appearance, the form being conical, round, or heart-shaped, and the seeds are flattened. A number are cultivated for the extremely pungent and stimulating fruit, which is used in medicine, in making sauces, and in preparing mixed pickles. Cayenne pepper is made from the fruit of several species, chiefly when the berries are ripe, when they have a scarlet or orange color. This product is made principally from *capsicum annuum,* known as chilli pepper, and is cultivated in the tropical and temperate climates of all the continents.

CAPSTAN (kăp′stăn), a strong, massive apparatus of wood shaped like a truncated cone, with holes for the reception of bars in the upper part, by means of which it may be revolved, and thus serve to raise or move a heavy weight by winding a rope around it. It is used for moving houses and on shipboard for weighing anchors. The smaller capstans are turned by hand, usually by two or three men, who work upon a lever which is inserted in holes at the tip or crown. Larger capstans are operated by horse, steam, or electric power.

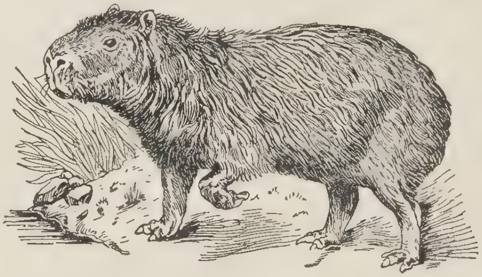
CAPSULE (kăp′sūl), in botany, a seed vessel consisting of one or more cells, in which the seeds are stored, such as poppy heads. Some capsules break open and discharge their contents, while others fall off entire with the seed. The term is applied in medicine to a small hollow case of gelatin. It is used to inclose medicine so as to permit its being swallowed without coming in contact with the organ of taste. The gelatinous envelope melts when in the stomach, thus setting the medicine free to act.

CAPTAIN (kăp′tĭn), in military, an officer in command of a company of infantry, a battery of artillery, or a troop of cavalry. In the United States navy a captain ranks next to a commodore, and his position corresponds to that of a colonel in the army. The term captain general is applied to the commander of the military forces of a province. In this sense the President of the United States is the captain general of all the military forces of the nation when in active service. In each State the supreme command of the State troops in times of peace is vested in the Governor, who is captain general of the military forces of the State.

CAPUA (kăp′ů-ȧ), a fortified city of Italy, twenty miles north of Naples, on the Volturno River. It has a cathedral and is the residence of an archbishop. Ancient Capua was about three miles southeast of the modern town, and was long as important as Rome and Carthage. The Romans considered it a favorite place of resort on account of its agreeable climate and beautiful location. It is rich in ancient ruins, among which are those of an amphitheater with a capacity for seating 60,000 people. It was founded by the Etruscans in the year 800 B. C. who named it Vulturnum. Geneseric with a force of Vandals captured it in 456 A. D., and the Saracens finally destroyed it in 840. Capua became celebrated in literature as the scene of the play of "Romeo and Juliet." The modern town has a public library, a fine cathedral, and manufactures of earthenware and clothing. Population, 1922, 14,328.

CAPUCHINS (kăp-ů-shēnz′), a religious congregation of the Franciscan order of monks, instituted by Matteo di Bassi in 1525. He desired to practice greater poverty than was required by the strict rule of the order of Saint Francis, and his congregation was validated by Clement VII. in 1526. The Capuchins were permitted to wear the habit and a beard, and their custom was to live in solitary places and as hermits. Their rules are very strict, requiring them to recite the canonical hours without singing, to spend an hour every morning in mental prayer and in silence, and to partake of the simplest kind of food. In climates and seasons of the year that permit the practice, they are enjoined to go barefooted. This class of monks is now most numerous in Austria, but they are represented in Canada and the United States. In the latter country they have provinces at Pittsburg, Pa., Leavenworth, Kan., Detroit, Mich., and at a number of other places. Bernardino Ochino, converted to Protestantism in 1542, and Theobald Mathew, the celebrated Irish advocate of total abstinence, are among the best known Capuchins.

CAPYBARA (kä-pê-bä′rȧ), a rodent animal of South America, allied to the guinea pig. It has the appearance of a hippopotamus on a small scale, but attains a length of only three feet. The legs are short, the head is large, and the hair is coarse and brown. It is tailless. It feeds mainly on vegetation and lives near streams. The flesh is taken for food by the natives, who eat it either fresh or salted. This animal is well distributed throughout the warmer parts of the continent, but is most abundant in Brazil and the Guianas.



CAPYBARA.

CARACAL (kăr′ȧ-kăl), a kind of lynx found in Africa and the warmer portions of Asia. It is strong and fierce, about the size of a fox, and is deep brown in color.

CARACALLA (kăr-ȧ-kăl′lȧ), **Marcus Aurelius Antoninus,** Emperor of Rome, born at Lyons (Lugdunum), France, in 188; died in 217. He succeeded his father, Septimius Severus, as Emperor of Rome in 211, and was associated with his brother Geta in the government, but murdered the latter in order to make himself the absolute ruler. In 213 he conducted a military campaign against the Alemanni in Germany and the following year invaded Thrace, where he was assassinated. The baths of Caracalla were built during his reign. They were located on the Appian Way, surrounded by beautiful gardens, and covered an area of about 130,000 square yards. Mosaics decorated the floors and fine statuary ornamented the walls, which were strengthened by columns of immense thickness. Water for these baths was obtained through the Marcian aqueduct, and accommodations for 15,000 guests were maintained.

CARACAS (kȧ-rä′kȧs), the metropolis and capital of Venezuela, located in a beautiful valley six miles from the Caribbean Sea. The site of the city is on the slope of Mount Avila, which attains a height of 8,640 feet, and the city is 3,020 feet above the tide level. It is connected by a railroad with its seaport, La Guayra, about eight miles distant. The plat of the city is regular, having streets at right angles, and many of its buildings are modern. Its altitude brings it within an equable temperature and healthful air. It is the seat of a school system for free attendance, and articulated with its courses are a number of professional colleges, technical schools, and the University of Caracas. The capitol building is a large and beautiful structure, and besides it there are federal buildings, the president's residence, several cathedrals, and the Basilica of Saint Ann. It is lighted by gas and electricity and has telephone and telegraph connection. Many of the streets are paved with stone and asphalt. Several public parks, gardens and promenades are maintained. The gardens and parks contain many are rare and beautiful plants, and fine collections of wild animals. It has a growing import and export trade, the latter consisting chiefly of coffee, cacao, and tobacco. Caracas was founded in 1567. Population, 1920, 73,520.

CARACCI (kä-rät′chê), or **Carracci**, a family of Italian painters, founders of the Bolognese school of painting, which flourished in the latter half of the 16th century. Ludovico Caracci, son of a butcher, was born at Bologna in 1555; died here in 1619. He studied at Venice and Parma, where he came in touch with the works of great masters, and returned to his native city. He interested many students of art, after founding a school that became famous in history for its exquisite drawings and paintings. Some of the finest works are still preserved, including "The Madonna and Child," "The Transfiguration," and "The Nativity of John the Baptist."—Caracci, Agostino, cousin of Ludovico, born in Bologna in 1558; died in 1601. He is, perhaps, the best known of the family. His best painting is "The Communion of Saint Jerome." He attained much skill as an engraver, and at Rome aided in the Farnese Gallery.—Caracci, Annibale, brother of Agostino, born in Bologna in 1560; died in Rome in 1609. He studied under his cousin and later at Venice and Parma, and produced the beautiful painting "Saint Roche Distributing Alms," now in the Dresden Gallery. His reputation soon reached Rome, where he was employed to paint the Farnese Gallery, in which he was assisted by his brother. He was a versatile inventor and undoubtedly the greatest artist of the three Caracci.

CARACCIOLI (kȧ-rät′chô-lê), **Francesco,** prince and admiral, born in Naples, Italy, in 1748; executed June 29, 1799. At an early age he entered the marine service. He first distinguished himself at Toulon in 1793 and five years later conducted operations against the Sicilian-English fleet. He was arrested in 1799, when Ruffo took Naples contrary to the terms of capitulation, condemned and hanged. This unjust proceeding was approved by Lord Nelson. It may be regarded the most severe stain on the reputation of the English admiral.

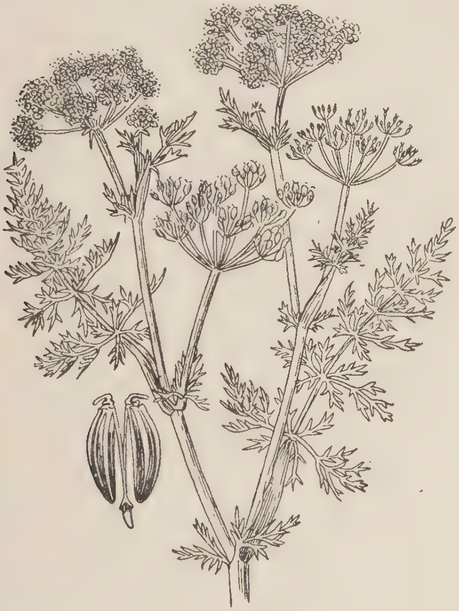
CARAT (kăr′ăt), a weight equal to the twenty-fourth part of an ounce, or three and one-fifth grains Troy. Jewelers use the term to express the fineness of gold; the whole mass is represented by twenty-four parts, the number of parts taken expressing so many twenty-fourths. Pure gold is twenty-four carats; eighteen carats, three-fourths gold; twelve carats, one-half gold, etc. Fine gold consists of two parts alloy and twenty-two of pure gold. The gold coinage of the United States is in these proportions. The double eagle weighs 516 grains, of which 464.4 grains are fine gold.

CARAVAGGIO (kär-rȧ-väd′jô), **Michelangelo Amerighi,** painter, born at Caravaggio, Italy, in 1569; died in 1609. He is the founder of the naturalistic school of painting, and as a boy prepared plaster for the artists at Milan, from whom he learned the work of a painter. Subsequently he studied at Venice, where he was influenced by studying the works of Giorgione. For some time he was associated in Rome with Cesare d'Arpino. His works are numerous and display grandeur in coloring. "The Entombment of Christ," painted for a church in Trastevere, is his masterpiece, and is now in the Vatican at Rome. Other noted paintings include "Love as a Ruler," in Berlin; "Supper at Emmaus," in London, and "Grand Master of the Knights of Malta," in the Louvre.

CARAVEL, or **Caravella,** a small vessel used in Southern Europe, fitted to carry from 25 to 150 tons. In Turkey the name is given to a ship of war, but in Portugal and Spain it has reference to a vessel with one or two sails, the larger of which is on the foremast. Caravels were used extensively in 15th and 16th centuries, when they usually had a capacity for a burden of 300 tons. They were fitted with four masts, one of which was square-rigged and the others were lateen-rigged. Columbus sailed with three of these vessels in 1492, the Santa Maria, the Niña, and the Pinta, of which the first mentioned was the flagship.

CARAVAN (kăr′ȧ-văn), the name applied to a company of travelers, merchants, or pilgrims passing through parts of Africa and Asia for purposes of safety and convenience. The Mohammedans form caravans annually to worship at Mecca; the most important caravans are assembled or organized at Cairo and Damascus. These often number from 30,000 to 50,000 pilgrims and move from fifteen to twenty-five miles a day. Much of the business of Northern Africa and Western Asia is carried on by caravans. The camel is used as a means of conveyance, owing to its strength and exceptional power of endurance in desert regions. Often 500 camels are used in a single caravan, the body moving in single file.

CARAWAY (kăr′ȧ-wȧ), a plant native to Southern Europe and Western Asia, and cultivated extensively in all continents for its aromatic seed. It has a fleshy root, which resembles that of the parsnip, finely divided leaves, and umbels of whitish flowers. The stem is from one to two feet high. The seeds are valued for their pleasant, aromatic flavor, and are used extensively by confectioners and bakers, and as a medicine to stimulate the digestive organs. The aromatic properties are derived from its volatile oil, known as *oil of caraway,* which is obtained by distilling. Caraway is grown in gardens for its seed in all the continents.


CARAWAY.

CARBAZOTIC ACID (kär-bȧ-zŏt′ĭc), a substance of great value in dyeing wool and silks. It is obtained by combining carbolic acid with nitric or sulphuric acid.

CARBOLIC ACID (kär-bŏl′ĭk), an acid obtained by the distillation of coal tar. *Carbol, phenol,* and *phenic acid* are other names by which it is known. It resembles creosote, which is similarly obtained from wood, in that it possesses a pungent taste, strong odor, and other properties similar to it. Being an effective poison to low forms of animal life, it is valued as a disinfectant and to preserve meat, and is used as medicine internally and externally. As an external remedy it destroys germs admitted to wounds. As a germicide, it must be brought into contact with the germ to destroy it.

CARBON (kär′bŏn), an elementary nonmetallic substance which is present in all organic compounds. It exists uncombined in three forms, as graphite, charcoal, and diamond. The diamond and graphite forms are crystalline and charcoal is amorphous. The diamond form is colorless or yellow, pink, blue, or green, and is transparent. It is the hardest substance known and the purest form of carbon. In the charcoal form it is mixed more or less with anthracite or bituminous coal and other substances. The pure charcoal is light, brittle, inodorous, and black in color. The graphite is gray-black with a metallic luster. It often separates in scales from molten iron, and is used for lead pencils and as carbons in electric lighting. Carbon consists more plentifully in compound form than all the other elements combined. It forms a number of compounds with hydrogen, called hydro-carbons, in which forms many properties, both chemical and physical, are possessed. It forms only two compounds with oxygen, although the two elements can be united without difficulty. Carbon is found as a regular constituent of both plants and animals.

CARBONATES (kär′bŏn-ȧts), the compounds in which carbonic acid is the base, such as carbonate of lime and some forms of lead ore. The former, in its purest natural form, is the mineral calcareous spar. Carbonate of chalk is the principal ingredient in the marbles and limestone. Other carbonates are those of soda, potassa, and ammonia. They comprise a class of salts that are used extensively in the arts and in medicine.

CARBONDALE, a city of Jackson County, Illinois, 92 miles southeast of St. Louis, Mo., on the Illinois Central Railroad. It is noted chiefly as the seat of the Southern Illinois Normal University, which has buildings costing $800,000. The industries include iron works, flour mills, and shipping of coal. Population, 1920, 6,267.

CARBONDALE (kâr′bŏn-dāl), a city of Lackawanna County, Pennsylvania, on the Lackawanna River, sixteen miles northeast of Scranton. It possesses large iron foundries, flouring mills, and other manufactories. The coal mines near it yield about 900,000 tons annually. There are excellent railroad facilities, electric street railways, electric lights, paved streets, good schools, and other public institutions. Population, 1920, 18,640.

CARBONIC ACID (kär-bŏn′ĭk), or **Carbon Dioxide,** a substance occurring free as a gas in the atmosphere, forming about $\frac{1}{2500}$ of the air. It is made up of twelve parts by weight of carbon and thirty-two of oxygen. Carbonic acid is twenty-two times as heavy as hydrogen, has no distinct smell or color, and has the property of turning blue litmus slightly red. It acts as a narcotic poison when present in the air to the extent of four or five per cent., and is incapable of supporting combustion or animal life. It is brought into the air by the breathing of animals, the burning of fuel, the decomposition of animal and vegetable substances, and the fermentation of liquors, and evolves from fissures of the earth. In coal mines it constitutes *choke damp*.

As carbonic acid is a dense gas, heavier than air, it has a tendency to sink into vaults, wells, and low places, often rendering valleys and caves uninhabitable. It is pleasant to the taste and forms a small per cent. of aërated beverages, such as carbonated mineral waters, champagne, and beer. Though poisonous to the lungs, it is agreeable and pleasant when taken into the stomach. It is found in large quantities in all marbles and limestones, is evolved from the colored parts of the flowers of plants both during the day and night, and from the green of plants during the night. Plants absorb it from the atmosphere during the day, and it forms an important part in their nourishment. It constitutes the largest ingredient in the food of vegetables.

The carbonic acid evolved from the fissures of the Upas valley in Java is very dense and rises to a height of about eighteen feet above the surface. The valley is nearly a mile in circumference and entirely devoid of animal or plant life. Birds attempting to fly across it drop dead, while a dog is killed by its influence in about fifteen seconds. Carbonic acid, when present in large quantities, extinguishes a lighted lamp or burning of any kind. The condition of the air in mines is tested by lowering a lighted lamp. Carelessness in entering mines without testing the air has caused the loss of many lives, as carbonic gas, if breathed freely, causes death by asphyxia. The presence of large quantities in poorly ventilated rooms, given off by the breathing of many persons, is the source of headache and depression, and causes the loss of health if long continued. Its presence in the air may be recognized by exposing a vessel containing lime water, as it causes a white film of carbonate of chalk or lime to form on the surface of the liquid, if present in large quantities.

CARBONIC OXIDE (ŏks′ĭd), a colorless gas containing one equivalent less of oxygen than carbonic acid, being a combination of about forty-three per cent. of carbon and fifty-seven per cent. of oxygen. It is generated in close furnaces as a product of imperfect combustion, mixed with carbonic acid and other gases. It is without smell and taste, burns with a blue flame, and is more poisonous than carbonic acid. When breathed as it issues from furnaces in factories, it sometimes causes asphyxia to the workmen.

CARBONIFEROUS AGE (kär-bŏn-ĭf′ẽr-ŭs), the period of time preceded by the Devonian age, and classed in the latter part of the Palaeozoic era. It is so named from the mineral coal and other carbonaceous matter found in the deposits, which include many fossils of plants and animals. Among the remains and traces of plants are chiefly ferns, rushes, conifers, and lepidodendrons. These plants differed greatly from those of the present time, and all of the species seem to have been very large. The mosses grew thickly matted and the ferns resembled trees with stems twenty feet in height. Among the animal life were the corals and crinoids, the gastropods, the cephalopods, crustaceans, scorpions, dragon flies, spiders, fishes, and numerous large reptiles. It is reasonably certain that more than 2,000 species of plants and almost that number of animals existed.

The carboniferous system lies between the Devonian and Permian systems of the Palaeozoic period. It is estimated that this system includes about 400,000 square miles of productive coal fields, but the area is undoubtedly much larger. These coal measures are widely distributed in all the continents, but the larger portion of commercial coal deposits are made up of bituminous and lignite coal, with fields of anthracite in the United States, Canada, and other regions, though the area of these fields is not extensive. Associated with the coal seams are deposits of fire clay, iron ores, limestone, potter's clay, and stone valuable in building. In some localities salt is obtained from the lower strata. See **Geology.**

CARBORUNDUM (kär-bô-rŭn′dŭm), a manufactured material made by combining carbon and silicon, two of the hardest known elements. In making this product, coke is crushed and ground to a fine powder and mixed in proper proportions with common glass sand. Salt and sawdust of determined quantities are added to this mixture for mechanical purposes. The mixture of coke, sand, sawdust, and salt is then placed in an electric furnace, and for thirty-six continuous hours an electric current of 1,000 horse power of energy is passed through the furnace, subjecting the mixture to a heat of approximately 7,000° Fahr. When the furnace is cool, the mixture is found converted into large masses of beautiful colored crystals of exceedingly brilliant luster. After the carborundum crystals have been removed from the furnace, they are crushed to separate the mass of crystals apart, then thoroughly washed, dried, and screened to separate the different sizes.

Carborundum is the hardest artificially made product, and in degree of hardness is exceeded only by the diamond. It is used extensively as an abrasive. For dentistry alone there are 205 separate and distinct devices in the form of wheels, points, and others that employ carborundum. This material enters into minute forms scarcely large enough to be picked up by the finger, and on the other hand the same material is used in wheels weighing 1,000 pounds. The largest factory for manufacturing this product in America is at Niagara Falls, where it is prepared for use in instruments and machinery, and for lining furnaces as a protection against great heat.

CARBUNCLE (kär'bŭn̲-k'l), a painful inflammation of the connective tissue beneath the skin, most frequently on the back. It resembles a boil, but is much larger and more painful, and its origin seems to be constitutional. In the beginning it is characterized by swelling and a severe burning pain, frequently accompanied by chills and fever, and in its later stages small blisters open and discharge a thin pus. Both surgical and medical treatment is sometimes required. The name *carbuncle* is applied to a variety of garnet obtained in Southern Asia and many sections of North America. It has a deep red color and is used in jewelry.

CARDENAS (kär'dā-nȧs), a seaport on the northern coast of Cuba, in the province of Matanzas, 103 miles east of Havana. It is one of the principal seaports of the island, has good railroad connections, and exports large quantities of fruits, tobacco, coffee, molasses, and sugar. Since the Spanish War of 1898 it has grown steadily in commercial importance. The manufactures include cigars, sugar, clothing, and utensils. It has several schools and convents, electric lights, and a system of waterworks. In 1898 it was the scene of an engagement between the United States blockading vessels and the Spanish batteries, in which Worth Bagley was killed, the first American to lose his life. Population, 1899, 21,940; in 1921, 32,727.

CARDIFF (kär'dĭf), a village of Onondaga County, New York, eleven miles north of Syracuse. It is situated in the center of a fine country. The village is notable for the pretended discovery of the Cardiff Giant, a statue carved from Iowa gypsum, made in Chicago, and buried at Cardiff. It was exhibited as a petrified giant at various times.

CARDIFF, an important seaport of Glamorgan County, Wales, at the mouth of the Taff River, on the estuary of the Severn. It has extensive docks and large exports of minerals, mostly iron and coal. The manufactures include machinery, clothing, implements, steamboats, and ironware. It formerly contained a castle of great strength, in which Henry I. imprisoned Duke Robert for twenty-six years. The city has modern facilities, a number of colleges and higher schools, many costly churches, and several libraries and public parks. Rapid transit connections are maintained with several suburban districts. Cromwell captured Cardiff in 1648, after a bombardment that lasted three days. Its modern growth dates from 1839, when the first great dock was opened. Population, 1921, 204,280.

CARDINAL (kär'dĭ-nal), the highest dignitary in the Roman Catholic Church under the Pope. The cardinals are classified in three divisions, which include the orders of cardinal bishops, cardinal priests, and cardinal deacons, the total numbering seventy, in allusion to the seventy disciples sent out by Christ. They are chosen by the Pope, the cardinal bishops numbering six; cardinal priests, fifty; and cardinal deacons, fourteen, who constitute the sacred college in which the election of the Pope is vested. The Roman pontiffs, before the reign of Nicholas II., were elected by the whole clergy of the city of Rome and by the prominent laity, and at one time even by the body of citizens. However, Nicholas II. transferred the election of the pontiffs to the cardinals, with the assent of the other parties, and Alexander III. in 1179 limited the election to the cardinals, a two-thirds vote being necessary to constitute the election. This method still prevails in the election of pontiffs. Among the list of privileges enjoyed by the cardinals is the precedence over bishops, archbishops, primates, and patriarchs. They have exclusive right to the titles "Eminence" and "The Most Eminent," and rank with royal princes.

CARDINAL FLOWER, the name of several species of the *lobelias,* native to the swampy places in temperate climates, and cultivated extensively as garden flowers. The stem is tall and simple and has alternate leaves, and the flowers are of a variety of colors, ranging from white to deep red. They are cultivated as ornamental plants in many flower gardens of Canada and the United States.

CARDINAL VIRTUES, the moral virtues which are regarded as the basis of all right action, so named from *Cardo,* a hinge, denoting the fundamental point on which all things turn. These virtues are four in number, embracing justice, prudence, temperance, and fortitude. Socrates and other ancient writers divided the virtues in this way, but modern ethics looks upon personal acts as virtues only so far as they respect and are respected by social relations.

CARDS, a kind of cards printed on pasteboard, having pictures and symbols, and used in playing a number of games. The *deck* or *pack,* as a set is called, consists of fifty-two cards, of four classes or suites, known as *clubs, diamonds, hearts,* and *spades.* The suites are distinguished by colors, the clubs and spades being black and the diamonds and hearts red, and the individual cards are known by the spots and faces. Thirteen cards make up each of the four suites, each of which includes spot cards from one to ten and three face cards, known as *king, queen,* and *jack* or *knave.*

Among the games played are casino, cribbage, draw poker, euchre, solitaire, whist, etc. Though used more extensively in playing games of chance than any other cards, they are proscribed by many Christian and other societies, chiefly because the games in which they are used either take up much time or are popular among those who play for money or other valuable considerations.

CARDUCCI (kär-do͞ot'chē), **Giosué**, poet, born at Valdicastello, Italy, July 27, 1836; died Feb. 15, 1907. He studied in Florence and Pisa, giving his time to courses in philology, and in 1861 became professor of literature in the University of Bologna. Here he founded a literary review intended to encourage poetry, and in 1857 he published his first volume of poetical works under the title of "Juvenilia." From an early age he had shown a fondness for poem writing, and many of his productions are noted for dealing with political questions, as he sided with the Republican party. "Odi barbare" is one of his best known poems, and his "Bozzetti critici" is a popular work in prose.

CAREY (kā'rĭ), **Henry**, poet and dramatist, born in London, England, in 1692; died in 1743. He was a son of George Saville, the Marquis of Halifax, and took extensive training in music. His works consist largely of operas, songs, and burlesques. They include "God Save the Queen," "Sally in Our Alley," and "The Dragon of Wantley."

CAREY, Henry Charles, political writer, born in Philadelphia, Penn., Dec. 15, 1793; died Oct. 13, 1879. He became a noted writer on political economy and founded a school devoted to that line of learning. He was a supporter of the Union during the Civil War, a trusted adviser of President Lincoln, and a member of the State constitutional convention in 1872. His valued library was bequeathed to the University of Pennsylvania. Among his most important writings are "Principles of Social Science," "The Credit System of France," "Great Britain and the United States," "The Past, Present and Future," "Letters on International Copyright," "The Way to Outdo England without Fighting Her," and "The Unity of Law."

CAREY, William, missionary and scholar, born in Northamptonshire, England, Aug. 17, 1761; died June 9, 1834. In 1781 he began to preach in the Baptist Church and became a coworker in the foreign missionary field in 1793. His efficient work made him one of the first missionaries to India, in which field he worked until his death. He established a printing house at Serampur, from which he issued lexicons and grammars of Eastern tongues, and published 200,000 Bibles in forty different languages. He served as professor of Oriental languages at Fort Williams College, Calcutta, from 1800 to 1830.

CARIB (kăr'ĭb), a tribe of Indians who formerly inhabited the northern coast of South America, from the Orinoco to the Amazon. They came in contact with the Spanish explorers in many islands of the West Indies. It is thought that they expelled the Arawakan tribe from the Lesser Antilles. These Indians practiced cannibalism and were warlike when first discovered, and the Spaniards subjected them as slaves. At present the descendants, mixed largely with the Negroes, are known as Black Caribs and number several thousand. They inhabit the coast of Central and South America.

CARIBBEAN SEA (kăr-ĭb-bē'an), the largest inlet of the Western Hemisphere, extending inland from the Atlantic Ocean. It is bounded on the south by Venezuela and Colombia, on the west by Central America, and on the north by Yucatan and the Greater Antilles. It is connected by Yucatan Channel with the Gulf of Mexico, whose waters unite with those of the inflowing currents to form the Gulf Stream. Among the principal arms are the Mosquito Gulf and the Gulf of Honduras, on the west, and the gulfs of Darien, Paria, and Venezuela, on the south. The length from east to west is 1,700 miles, and the extreme depth, south of Cuba, is 16,000 feet.

CARIBOU (kăr'ĭ-bo͞o), the American woodland deer, employed by the natives to draw their sledges. Formerly it ranged south as far as Ohio and Colorado, but it is now confined chiefly to Canada. It has large hoofs, prominent antlers, and long hairs about the neck and feet. See **Deer.**

CARICATURE (kăr'ĭ-kȧ-tūr), a picture or drawing of a person in which certain points are so exaggerated as to give the whole a ludicrous effect. The art of caricaturing dates from the early Egyptians, and was employed more or less in all times. At present it forms a distinct feature of comic journals, such as *Puck* and *Judge,* in the United States; *Fliegende Blätter,* in Germany; *Charivari,* in France; and *Punch,* in England. Among the leading caricaturists are Nast, Opper, and McCutcheon, in the United States; Wilhelm Scholz, in Germany; Wilhelm Busch, in Austria; Honaré Daumier, in France; and George Cruikshank and John Doyle, in England.

CARLETON (kärl'ton), **Sir Guy,** soldier and statesman, born at Strabane, Ireland, Sept. 3, 1724; died Nov. 10, 1808. He was made governor of Quebec in 1772, and defended the city against the Americans at the time of the American Revolution, in 1775. The following year he invaded New York and captured Crown Point, and in 1777 was commissioned lieutenant general. He succeeded Sir Henry Clinton as commander in chief of the British forces in America in 1782, and was present at the evacuation of New York the following year. In 1786 he was again appointed governor of Quebec and was made Lord Dorchester, but resigned as governor in 1796, after rendering efficient services in that office.

CARLETON, William, author and lecturer, born at Hudson, Mich., Oct. 21, 1845; died Dec. 18, 1912. In 1869 he graduated at Hillsdale College and became a writer and lecturer. He visited Europe several times and became popular with the people of the British Isles. For some time he was editor of *Everywhere,* an illustrated magazine. His poems are celebrated for pathos and vigor. They include, among others, "Farm Legends," "Farm Festivals," "Farm Ballads," "Young Folks' Centennial Rhymes," and "City Ballads."

WILLIAM CARLETON.

CARLETON, William, novelist, born in Tyrone County, Ireland, in 1794; died Jan. 30, 1869. He was educated among the peasantry and attended an academy in Glasslough, and began his literary career by writing sketches for periodicals in Dublin. His first successful work was issued in 1830 under the title "Traits and Stories of the Irish Peasantry," which pleased the public on account of its original style. His "Valentine M'Clutchy" is a novel in which he advocates a repeal of the union between England and Ireland. Among other noteworthy writings are "Fardorougha, the Miser," "Rody, the Rover," and "Misfortunes of Barney Branagan."

CARLISLE (kär-līl′), a city of England, capital of Cumberland County, fifty miles west of Newcastle. It is located at the confluence of the Eden and Caldew rivers and several important railroads, and has communication with Liverpool by steamboats. Among the chief buildings is a cathedral founded by William Rufus. A castle, in which Mary, Queen of Scots, was confined after the Battle of Langside, founded in 1092, stands near the city and is now used as a barrack. The manufactures include cotton and woolen textiles, clothing, and ironware. It has a large trade in produce and manufactures. Carlisle dates from an early time in the history of England and was destroyed by the Danes in 900. Population, 1922, 46,580.

CARLISLE, county seat of Cumberland County, Pennsylvania, about eighteen miles west of Harrisburg, on the Cumberland Valley, the Pennsylvania, and other railroads. It is platted on a regular plan and has waterworks, electric lights, and other municipal facilities. The manufactures include railroad cars, ironware, carpets, and machinery. It is the seat of Dickinson College and the former Carlisle Indian School, founded by the government in 1879. This college was supported by the government for the education of Indian pupils, and was attended by three thousand students, of whom several hundred were graduated. It ceased to operate as an Indian school in 1918, when it reverted to the government, after which it was used for the hospitalization of wounded soldiers. Near the city is Mount Holly Springs, a popular summer resort. Carlisle was settled in 1751. At the time of the Civil War, in 1863, it was bombarded by the Confederates. Population, 1920, 10,636.

CARLISLE, John Griffin, statesman, born in Campbell County, Kentucky, Sept. 5, 1835. He started his life work by teaching school, was admitted to the bar in 1858, and became a member of the State Legislature in 1859. Efficient service caused his election to the State Senate in 1866 and his reëlection in 1869. In 1868 he attended the Democratic national convention as a delegate at large, and subsequently became prominent in national politics. He was Lieutenant Governor of Kentucky four years, beginning in 1871, and in 1877 entered Congress, serving as speaker of the House of Representatives from 1883 to 1889. In 1893 he was elected to the United States Senate and became Secretary of the Treasury in the second administration of President Cleveland. He was an advocate of the single gold standard, supporting Senator Palmer for President in 1896. Later he practiced law in New York City. He died July 31, 1910.

CARLOS (kär′lōs), **Maria de los Delores,** Duke of Madrid, Spanish pretender, born March 30, 1848; died July 18, 1909. His father, Don Carlos Juan, resigned his claims to the throne in 1868. He is commonly styled Charles VII. In 1872, 1873, and 1875-78 his followers raised a rebellion in the mountain provinces, but the insurrections were quashed and Carlos fled to France, where he resided most of the time.

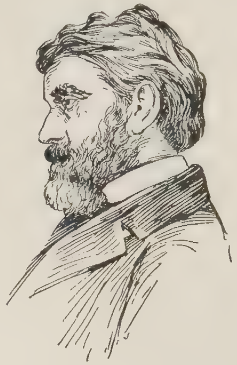
CARLOVINGIAN (kär-lō-vĭn′jĭ-an), the name of a historical royal family which furnished a number of sovereigns for Germany, France, and Italy in the 8th, 9th, and 10th centuries. The family origin dates back to the early part of the 7th century, but derived its name from Charles Martel. The latter reigned in France from 715 to 741. He was succeeded by his son Pepin, who reigned from 741 till 768, and he was succeeded in the government by Charlemagne and Carloman, who reigned conjointly from 768 to 771. In 771 Charlemagne became sole king, was crowned emperor by the people of the western world in 800, and was succeeded by his son Louis le Debonnaire in 814. The latter divided his empire among his sons and in 840 Charles the Bold became King of France. He was succeeded by a number of weak princes in 877, and the dynasty came to its end with Louis V. in 987. The most important division of the empire of Charlemagne consisted of Germany, France, and Italy, beginning in 887. A branch of the family ruled in Germany until the rise of the houses of Franconia and Saxony, and in Italy until the rise of Otho the Great, when the country became united to the German empire.

CARLSBAD (kärls′bät), or **Karlsbad,** meaning Charles's Bath, a city in Bohemia, seventy miles northwest of Prague, on the Tepl River. It is so named because its mineral springs were first utilized by Charles IV. (1316-78), Emperor of Germany, for their healing qualities. It is the most aristocratic place and health resort in Europe. Visitors crowd it from June to September, the visiting delegations often numbering 25,000. It has cold and thermal springs, the latter reaching a temperature of from 80° to 165° Fahr. The city has ample accommodations for guests, such as parks and hotels and is in every way fitted for the entertainment and accommodation of guests. In the market place is a beautiful statue of Charles IV. The manufactures include carpets, needles, scissors, knives, woodwork, and articles of glass, which are sold largely to visitors. Among the municipal utilities are gas and electric lighting, a public library, and steam and electric railways. Population, 1923, 15,375.

CARLSRUHE (kärls′ro͞o-e), or **Karlsruhe,** meaning Charles's Rest, a city in Germany, capital of the grand duchy of Baden, thirty-eight miles northwest of Stuttgart. It was founded in 1715 by Markgraf Charles William, whose remains are interred below a statue in the market place. The city is built on a beautiful plan, and has several fine edifices, including castles and palaces. The court library contains 100,000 volumes and the public library is somewhat larger. Its museums have rare collections of antiquity and natural history. The city possesses fine botanical gardens, a large market place, several public squares, and a number of monuments. It has manufactures of railroad cars, carriages, jewelry, locomotives, carpets, textiles and chemical products. The streets are paved with stone and asphalt and traversed by lines of electric railways. Population, 1905, 111,249; in 1920, 134,161.

CARLSTADT (kärl′stät), **Andreas,** reformer, born at Carlstadt, Germany, in 1481; died Dec. 25, 1541. His real name was Andreas Rudolph Bodenstein, but he adopted the name of his town. He graduated at the University of Wittenberg, and subsequently taught the Christian doctrine in various Italian and German universities. While in Italy, he remained a Catholic, but on returning to Wittenberg, in 1513, he found the university had adopted the teachings of Luther, and he became a warm supporter of Luther and the Protestant faith. At the time Luther was at Wartburg, he began to side with Zwingli on points of doctrine, and it is largely through his work that the Calvinists became strongly organized.

CARLYLE (kär-līl′), **Thomas,** eminent author, born in Ecclefechan, Scotland, Dec. 4, 1795; died in Chelsea, London, Feb. 5, 1881. His education was obtained by attending successively the village school, the Annan Grammar School, and the Edinburgh University with the view of entering the ministry of the Scottish Church, but afterward he followed teaching, studied law, and took up literature as a profession. His first contributions were to the "Edinburgh Encyclopaedia" and to the *Edinburgh Review.* He translated Legendre's "Geometry" in 1824. His celebrated "Life of Schiller" appeared in the *London Magazine* in 1823, but it was revised and rewritten by him two years later and was highly praised by the best critics. In 1827 he published "Specimens of German Romance," which was issued from the press in four volumes. His "Sartor Resartus" is counted among his most characteristic works, and professes to be a history of Herr Diogenes Teufelsdröckh. It illustrates the life and opinions of its most fantastic hero, and abounds with solemn aspirations, tragic patience, and riotous humor. He removed permanently to Chelsea in 1834, and three years later published his "French Revolution," the first work that bore the author's name. During the same year he lectured extensively on "German Literature," "Revolutions of Modern Europe," and "Heroes, Hero Worship, and the Heroic in History."


THOMAS CARLYLE.

Carlyle published his masterpiece in 1845, entitled "Oliver Cromwell's Letters." The power and extensive research displayed in this book are marvelous, and most successfully demonstrate his greatness as an essayist and writer. In 1850 appeared "Latter-Day Pamphlets," the next year the "Life of John Sterling," and in 1858-60 was published his great history of Germany from the Middle Ages, entitled "The History of Frederick the Great." His last extensive work appeared in 1866 under the title of "The Early Kings of Norway." In 1870 he discussed the "Franco-German War," the "Eastern Question," and many other notable events in letters to the London *Times* and similar publications.

Carlyle was the recipient of many distinguished honors, including a gold medal presented by a hundred representative men and women in English literature, a like tribute from German scholars, and many other distinctions. He was a personal friend of Goethe, John Stuart Mill, Coleridge, and Emerson. Carlyle's wife was one of the most accomplished women of her time, and when she died in 1866 he said the light of his life had gone out. The style of Carlyle's writings is remarkable in its power and graphic effect, though somewhat abrupt and eccentric. He is rated among the best moral forces of the last century. His writings of the

French Revolution, German literature, and Oliver Cromwell are especially noteworthy as affecting the opinion of his time, and throwing the valuable light of research before the reading world.

CARMACK, Edward Ward, statesman, born near Castilian Springs, Tenn., Nov. 5, 1858; died Nov. 9, 1908. He was admitted to the bar and established a successful practice at Columbia, Tenn. In 1884 he was elected to the State Legislature, and about the same time founded the Nashville *Democrat,* which was afterward merged into the Nashville *American,* of which he was the editor. He founded the Memphis *Commercial* in 1892, which he made a powerful political organ in his State. In 1897 he was elected to Congress as a Democrat, serving until 1901, when he was elected to the United States Senate. His death resulted from a shot fired by Robin Cooper, an attorney and political opponent.

CARMAN, (kär′man), **William Bliss,** journalist and poet, born at Fredericton, New Brunswick, April 15, 1861; died June 8, 1929. He attended the University of New Brunswick, and later studied in Edinburgh and Harvard. For some time he taught school and practiced law and in 1890 became editor of the New York *Independent.* His writings are very numerous and many of them touch in an interesting manner upon the coasts and forests of Canada. They include "Low Tide on Grand Pré," "Songs from Vagabondia," "By the Aurelian Wall," "Christmas Eve at Saint Cavin's," "Ode for the Coronation," "Songs of the Sea Children," and "Songs for a Northern Garden."

CARMEL (kär′mĕl), the name of a range of hills in Palestine, extending from the Mediterranean to the plain of Esdraelon. The length of the range is about twenty-six miles, extending from the plain of Dothan in a northwesterly direction, and the highest altitude is 1,810 feet. Mount Carmel, an eminence near the sea, is about 1,500 feet high and is the seat of a monastery, the monks being called Carmelites. These mountains were a favorite retreat of the prophets Elijah and Elisha, and here were enacted many noted scenes in Bible history.

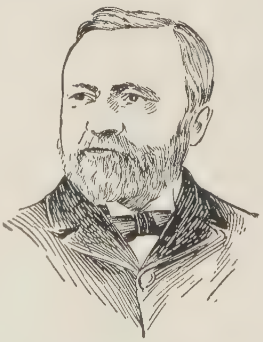
CARMELITES (kär′mĕl-īts), a monastic order of the Roman Catholic Church, known officially as the Order of Our Lady of Mount Carmel. Those who belong to the organization claim that it was instituted by Elijah, the prophet, but it dates from 1156, when Count Bertrand, one of the crusaders, came from Calabria and established the monastery on Mount Carmel, in Palestine. The Saracens compelled them to wear striped dresses, but later they changed to a habit of brown with a white cloak and scapular, from which they came to be known as white friars. The Carmelite nuns date from 1452, and both they and the friars were reorganized by Saint Theresa in the 16th century, when they became known as barefooted Carmelites. At present they are found in all the countries where the Catholic Church has a considerable membership. They are austere in their habits of life.

CARMINE (kär′mīn), a pigment of a brilliant scarlet color, obtained from cochineal. Several processes are employed in obtaining this product, one of which is as follows: Put one pound of cochineal in three gallons of water, after fifteen minutes add one ounce of cream of tartar, heat gently for ten minutes, add half an ounce of alum, boil about three minutes, and draw the liquid into clean glass pans, in which the carmine will settle at the bottom, when the water will be drawn off and the product dried. Carmine is used as rouge for imitating the soft blush upon the cheeks, and in coloring confectionery and artificial flowers. Carmine lake, a product obtained from the residues of cochineal in manufacturing carmine, is used in printing and painting.

CARNATION (kär-nā′shŭn), the name of the double-flowering variety of the clove pink. The highly cultivated carnation is noted for its beautiful colors and sweet scent. It is propagated by layers or cuttings of shoots in the summer season. The plants are taken up late in the fall and set in the greenhouse, where they bloom nearly the entire winter. Under cultivation the carnation has assumed a large variety of tints and forms. It is grown very extensively for the market.

CARNEGIE (kär-nĕg′ĭ), a borough of Allegheny County, Pennsylvania, six miles southwest of Pittsburg, on the Pennsylvania and the Wabash railroads. It occupies a fine site on Chartier's Creek and has a large jobbing trade. The manufactures include iron and steel products, machinery, and implements. Its name was changed from Mansfield Valley to Carnegie in 1894. Natural gas, coal, and oil abound in the vicinity. Population, 1900, 7,330; in 1920, 11,516.

CARNEGIE, Andrew, manufacturer and philanthropist, born at Dunfermline, Scotland, Nov. 25, 1835. His father was a hand-loom weaver and emigrated to America to better his condition. Andrew became a telegraph operator at Pittsburg, where he made the acquaintance of Woodruff, the inventor of the sleeping car, and engaged in the enterprise of getting it into use. The accumulation of his vast fortune is based upon this venture. He became superintendent of the Pittsburg division of the


ANDREW CARNEGIE.

Pennsylvania railroad, and a member of the oil syndicate, and established in company with others a rolling mill. The oil syndicate realized an annual cash dividend of $1,000,000, and the rolling mill enterprise enabled him to become the controller of the largest system of iron and steel works in the world. He donated largely to libraries and other enterprises, including a total of about 1,500 libraries in Europe and America. He gave the Bellevue Hospital in New York $50,000 and gave Pittsburg $500,000 for a free library, while many other cities received similar gifts. His largest gifts include $10,000,000 to the Carnegie Institute at Pittsburg, $5,200,000 to the New York City library, $10,000,000 to the Scottish universities, $5,000,000 to pension the employees of the Carnegie companies, $5,000,000 to the Hero Fund, $22,000,000 to the Carnegie Institution of Washington, and $1,500,000 for the Peace Palace at The Hague. Carnegie produced various writings on the labor question, among them "Round the World," "An American Four-in-Hand in Britain," "The Triumphant Democracy," and "The Gospel of Wealth." He died Aug. 11, 1919.

CARNEGIE INSTITUTION OF WASHINGTON, an institution founded at Washington, D. C., by Andrew Carnegie, and incorporated Jan. 4, 1902. Its object is to promote higher study and original research in any department of science, art, or literature, for which purpose it is designed to coöperate with learned societies, colleges, technical schools, governments, and universities. The founder donated $10,000,000 to establish this institution. To the original endowment he added $2,000,000 in 1907 and $10,000,000 in 1911. In 1925 the Carnegie Corporation of New York added an additional increase of $5,000,000.

A board of trustees and ex-officio members of such a board were named for the Carnegie Institution by its founder. The ex-officio members are: The President of the United States, the president of the Senate, the speaker of the House of Representatives, the secretary of the Smithsonian Institution, and the president of the National Academy of Sciences. The trustees named originally were: John S. Billings, New York; Grover Cleveland, New Jersey; William H. Frew, Pennsylvania; Lyman J. Gage, Illinois; Daniel C. Gilman, Maryland; John Hay, District of Columbia; Abram S. Hewitt, New York; Henry L. Higginson, Massachusetts; Henry Hitchcock, Missouri; Charles L. Hutchinson, Illinois; William Lindsay, Kentucky; Seth Low, New York; Wayne MacVeagh, Pennsylvania; D. O. Mills, New York; S. Weir Mitchell, Pennsylvania; William W. Morrow, California; Elihu Root, New York; John C. Spooner, Wisconsin; Andrew D. White, New York; Edward D. White, Louisiana; Charles D. Walcott, District of Columbia; and Carroll D. Wright, District of Columbia. Jan. 29, 1902, the institution was duly organized, when Daniel C. Gilman was chosen chairman of the board of trustees and John S. Billings was named as secretary.

The object and administration of the Carnegie Institution are best set forth in the deed of gift, which contains the following:

First—To promote original research, paying great attention thereto as one of the most important of all departments.

Second—To discover the exceptional man in every department of study whenever and wherever found, inside or outside of schools, and enable him to make the work for which he seems specially designed his life work.

Third—To increase facilities for higher education.

Fourth—To increase the efficiency of universities and other institutions of learning throughout the country, by utilizing and adding to their existing facilities and aiding teachers in the various institutions for experimental and other work in these institutions as far as advisable.

Fifth—To enable such students as may find Washington the best point for their special studies to enjoy the advantages of the museums, libraries, laboratories, observatory, meteorological, piscicultural, and forestry schools and kindred institutions of the several departments of the government.

Sixth—To insure the prompt publication and distribution of the results of scientific investigation, a field considered highly important.

CARNELIAN (kär-nēl'yan), or **Cornelian,** a mineral of the chalcedony variety. It is found in various colors, usually reddish, but sometimes yellow, brown, or white. This mineral is widely distributed, especially in the region of Lake Superior, but the finest specimens are brought from India, where it is obtained chiefly in the vicinity of Cambay. It is used largely for ornaments and beautiful seals are engraved on it.

CARNIVAL (kär'nĭ-val), the festival week before the beginning of Lent. It is celebrated in Roman Catholic countries with much freedom and mirth, especially at Naples and Rome. In some of the American cities it is celebrated under the name of *Mardi Gras.* The cities of New Orleans and Mobile are especially enthusiastic in its observance.

CARNIVORA (kär-nĭv'ō-rȧ), the name applied to animals which have teeth fitted for the mastication of animal matter and prey upon other animals. They possess short jaws, large jaw muscles, and teeth especially fitted for cutting and mincing flesh. The body is slender, thus giving advantage in securing prey, while the jaws differ greatly from the long jaws of herbivorous animals like the horse and ox, which require time to grind their less nutritious food. The stomach is simple and the alimentary canal is short, and the latter has only about three times the length of the body, while in herb-eating animals the alimentary canal is often from ten to thirty times the length of the body. The most important carnivorous animals include the lion, tiger, tapir, wolf, bear, leopard, skunk, coati, panther, puma, jaguar, raccoon, and walrus.

The carnivorous animals are well distributed in all the continents except Australia, where they are limited to the flesh-eating marsupials. They vary in size from the small and slender ermine to the large polar bear, which may weigh 2,000 pounds. The species native to tropical countries are the most numerous and carry on a constant warfare against man as well as the lower animals. The dog and the cat, though among the fiercest of this class, have been domesticated as pets.

CARNIVOROUS PLANTS, a class of plants which feed or subsist on small animals, especially insects. Many species are included in this group and most of them occur in swamps where nitrogenous matter is scant, hence the advantage of feeding upon animal life. The Venus's flytrap, common to North Carolina, is a notable example. It has leaves divided into halves which close instantly, much like a trap, when minute hairs upon their surface are touched, and the entrapped insect is held until the digestible parts are assimilated, when the leaves open again. The pitcher plant (q. v.) is another notable example, and its numerous species are more or less widely distributed. It has hollow leaves in which water, made up partly of a secretion of the plant itself, comprises the trap, while a honeylike exudation lures the insects, and small hairs strike downward when touched and cause the insect to fall into the basin. The butterwort of Canada and the northern parts of the United States belongs to the carnivorous plant. Other familiar species are the sundews, and such plants as the petunia and tomato, whose leaves are frequently covered with insects, from which the plant is supposed to derive some nourishment.

CARNOT (kär-nō'), **Lazare Nicolas Marguerite,** soldier and statesman, born in Nolay, France, May 13, 1753; died Aug. 2, 1823. He was trained as a soldier and a military engineer and distinguished himself by gallantry at an early age. In 1783 he was sent to the legislature, where he became noted for his eulogy on Vauban, and as a member of the convention voted for the execution of Louis XVI. He took a prominent part among the revolutionists and after the Reign of Terror was impeached. A disagreement with Barras forced him to leave France in 1797, but he was recalled by Napoleon and made minister of war. He opposed Napoleon in his scheme to extend the power of a centralized government, but remained true to him after the return from Elba. Subsequently he retired to private life and died at Magdeburg, Germany.

CARNOT, Marie François Sadi, noted statesman, born in Limoges, France, Aug. 11, 1837; assassinated June 24, 1894. He was the son of Lazare Carnot and was educated at Ecole Polytechnique as a civil engineer. He took a prominent part during the siege of Paris in 1870-71 and was commissary general, in which position he rendered valuable assistance in the defense. After serving in the national assembly, he accepted the office of minister of finance in 1886. In 1887 he was elected president of France, succeeding M. Grévy. In 1891 the order of Saint Andrew was conferred upon him by the Czar of Russia. He took a prominent part at Paris and Toulon in the Franco-Russian fêtes in 1893. He was a candidate for reëlection to the presidency, but was assassinated by an Italian named Caserio Santo, who inflicted a dagger wound at a fête given in his honor at Lyons. Carnot ranked as a high-minded statesman, and the French people greatly regretted his sad and unexpected death.

CAROB (kăr'ŏb), or **Locust,** a tree native to the countries adjacent to the Mediterranean Sea. In size and appearance it resembles the apple tree, but is evergreen, with oval leaflets, and bears hornlike pods filled with a mealy pulp of agreeable taste and odor. The pulp is valuable as stock food, and is used to some extent as human food by the poorer classes. Carobs are often called *Saint John's bread* from the tradition that they are the locusts eaten by John the Baptist while he was in the wilderness. It is probable that they are the husks alluded to by Christ in the parable of the prodigal son. The tree is exceedingly productive, often yielding from 700 to 900 pounds in a season. The wood is useful in tanning, while the roots contain medical properties. It is not allied to the American locust. The Moors and Arabs cultivate it extensively. It is gaining a foothold in India, where it serves a useful purpose as a food article.

CAROLINA (kä-rō-lē'nä), **Maria,** Queen of Naples, born Aug. 13, 1752; died Sept. 8, 1814. She was a daughter of Francis I. and Marie Theresa of Austria, and became Queen of Naples by her marriage with Ferdinand IV., in 1768. She exercised great influence with the king and public men, and through her, in 1784, Sir John Acton was made prime minister. In 1798 she caused the king to declare war against France, but when the Austrian army was defeated, in 1799, Napoleon sent an army against Naples and the royal family was compelled to flee to Sicily, where they were protected by the British government. In 1805 she joined the coalition against Napoleon, and both she and her husband were dethroned in 1806, when Joseph Bonaparte was set up as King of Naples.

CAROLINE (kăr'ō-līn), **Amelia Elizabeth,** Queen of England, born May 17, 1768; died Aug. 7, 1821. She was a daughter of the Duke of Brunswick-Wolfenbüttel and a niece of George III. of England. In 1795 she became the wife of the Prince of Wales, afterward George IV., who married her with the purpose of liquidating his debts. She was separated from the king after the birth of their daughter, the Princess Charlotte, and was offered a large income on condition that she would leave England, but this she refused. In 1820, on the accession of George IV., the government prosecuted her on a charge of adultery, but her many influential friends compelled the ministry to dissolve the divorce bill, after it had passed the House of Lords. She was expelled from Westminster Abbey when she insisted on her right to be crowned with her husband, and died soon after.

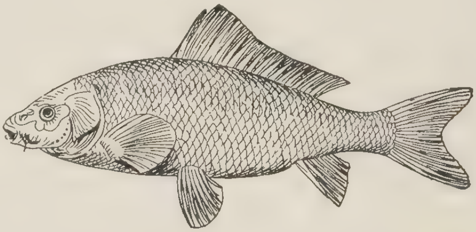
CAROLINE ISLANDS, a group of islands in the Pacific Ocean, lying north of New Guinea and east of the Philippines. The area is 570 square miles, and, including the Pelew group, 860 square miles. The archipelago consists of thirty-six groups of islands, the principal ones being the Pelew, Yap, Ponape, and a number of other island groups. About 525 islands are included in the archipelago. Of this number about 200 are in the Pelew group, of which Balel-Thaob is the largest, containing an area about as large as all the other groups put together. Commercially, the most important of the entire group is Ponape, containing an area of 134 square miles. Most of the surface is fertile. The products include fruits, cereals, and cocoanuts, while excellent pasturage for horses and cattle abounds. Several of the islands are volcanic and rich in minerals, including quartz and limestone. However, the larger number are of coral formation. The natives belong to the Polynesian group, while the Europeans consist mostly of Germans, who control the trade and manufactures. Agriculture, stock raising, mining, and commerce are the chief occupations. The forests yield timber for cabinet work and various fruits used in making varnish.

The Caroline Islands were discovered by the Portuguese in 1527 and were annexed to Spain in 1686. A dispute arose over the commercial relations between Germany and Spain in 1885, which was adjusted by the Pope under a joint agreement of the two nations, by which Spain retained control and Germany secured special trade advantages. The American representatives at the Paris convention, following the Spanish-American War, vainly endeavored to induce Spain to cede them to the United States. In 1899 Germany bought the islands from Spain for about $4,000,000. They were under a German governor until 1915, when the Japanese took possession of the islands as the Asiatic phase of the Great European War. Ponapé is the seat of government in the Eastern Carolines and Yap, in the Western Carolines. Population, 1923, 55,466.

CAROLINGIANS (kăr-ŏ-lĭn′jĕ-ănz), the second dynasty of Frankish kings, so named from Charles Martel. This dynasty succeeded the Merovingians in 751, when Pepin the Short became king. He was a son of Charles Martel, who was mayor of the palace in the Frankish kingdom, and was succeeded by his sons, Carloman and Charlemagne, but the latter soon became sole ruler, in 771, and was succeeded by his son, Louis the Pious. The latter divided his empire into departments, each of which was presided over by one of his sons, and after his death, in 840, the great empire was divided. Charles the Bold, son of Louis the Pious, became king of the portion of the territory corresponding to modern France and is the founder of the French dynasty. He died in 877 and was succeeded by a number of princes until in 987, when Hugh Capet, founder of the Capetian dynasty, became King of France.

CAROTID ARTERIES (kȧ-rŏt′ĭd), the name of two great arteries that serve to convey the blood from the aorta to the head and brain. The common carotids are two arteries, one on each side of the neck. Each divides into an external and internal branch. The internal carotid supplies the eye and brain with blood, while the external carotid supplies the neck, face, and upper parts of the head.

CARP (kärp), a fish native to the freshwater lakes and streams of Central Europe and corresponding latitudes in Asia. Owing to its value as an article of food, it has been extensively naturalized in many countries, and is cultivated in many parts of Canada and the United States. It has been transferred more extensively than any other fish, except, perhaps, the gold fish, and can subsist out of water longer than any other. Under careful feeding it attains a weight of three pounds when six years old, and often reaches a weight of eighteen pounds at maturity, while in Europe it has been known to weigh forty pounds. The fins are dark brown, and the body is yellowish beneath and olive brown above. Its food consists chiefly of aquatic plants, but it is fond of insects and worms. The carp is not a favorite game fish, as it is not a free biter, and is quite cunning in evading a net. Among the species are the *German, leather, golden,* and *crucian* carp. The leather carp has no scales.



COMMON CARP.

CARPATHIAN MOUNTAINS (kär-pā′thĭ-an), a mountain range of Central Europe, extending a distance of about 875 miles from Pressburg on the Danube to Alt Orsova on the

Rumanian frontier. They form two great masses, one in Hungary and one in Transylvania, the group lying almost entirely within Austria and Rumania. The culminating peak, Gerlsdorferspitze, has an altitude of 8,737 feet above sea level. These highlands consist of various chains and groups, including the Carpathians proper, the Little Carpathians, and the Transylvanian Alps. They are timbered to a height of nearly 5,000 feet, the lower portions with valuable walnut groves, and the higher with beech, cherry, and pine. The groups within Hungary are exceedingly rich in various minerals, especially limestone and iron. Many valleys which produce fruits and cereals lie in different portions, while some parts are rocky, barren, and exceedingly precipitous. The only glacier within the region is on the northern declivity of Eisthal Peak.

CARPEL (kär′pĕl), in botany, the name of the leaf forming the pistil, or one of the several parts of a compound pistil. See **Flower.**

CARPENTARIA (kär-pĕn-târ′ĭ-à), **Gulf of,** an extensive indentation of the northern coast of Australia. It extends from Cape York to Cape Arnhem, is about 500 miles long, and incloses numerous islands. The shores are generally low. It was so named from Peter Carpenter, a Dutch navigator, who explored it in 1627.

CARPENTER (kär′pĕn-tẽr), **Mary,** philanthropist, born in Exeter, England, April 3, 1807; died June 15, 1877. She was the eldest child of Lant Carpenter (1780-1840), a Unitarian minister, and devoted her life to the elevation of orphans and neglected children. In 1835 she became secretary of a society whose object was to visit and instruct those needing assistance, and in 1854 established the Red Lodge at Bristol, a reformatory school for girls. In 1871 she founded the National Indian Association to promote reformatory work in India, which country she visited three times, and in 1873 came to America and formed the acquaintance of a number of public men. She published "Reformatory Schools," "Six Months in India," "Our Convict," and "Juvenile Delinquents."

CARPENTER, Matthew Hale, statesman, born in Moretown, Vt., Dec. 22, 1824; died Feb. 24, 1881. He studied at West Point for two years and subsequently took a course in law, and in 1847 was admitted to the bar. The following year he removed to Beloit, Wis., and later built up a large practice in Milwaukee. In 1869 he was elected to the United States Senate and served continuously until 1875, and was again elected in 1879. serving until his death. He represented Samuel J. Tilden before the Electoral Commission and attained to eminence as a constitutional lawyer.

CARPENTER, William Benjamin, physiologist, born at Exeter, England, Oct. 29, 1813; died Nov. 19, 1885. His early education was secured at Bristol and afterward he studied at London and Edinburgh. He graduated in 1839, for which occasion he prepared a thesis on the nervous system in invertebrate animals that prepared the way for his "Principles of General and Comparative Physiology." In 1844 he was appointed professor of physiology at the Royal Institute. He was made professor of medical jurisprudence at the University College in 1849, and in 1856 became examiner at the University of London. He made three voyages to the North Atlantic and the Mediterranean to investigate marine zoölogy, and published valuable reports on the feather stars and crinoids. His work was useful in that it tended to systematize scientific knowledge and render it of convenient form in the hands of students. Among his best known works are "The Unity of the Functions of Organized Beings," "General and Comparative Physiology," "Introduction to the Study of Foraminifera," "Mesmerism and Spiritualism," and "The Nature and Man."

CARPENTER BEE, an insect of the bee family, so called from its great skill in working wood. The insects of this class include some of the true bees, and most of them inhabit countries that have a warm climate. Several species are common to America and Europe, some of which are as large as the bumblebee These insects cut a longitudinal hole or tunnel, about a foot long and a third of an inch wide, usually in dry trees, and in these they lay their eggs and store honey.

CARPENTRY, the art or calling of framing timber for architectural and other purposes. The term is properly applied to framing heavy work, such as sills, flooring, roofs, and partitions. The art of doing the ornamental work is called *joining,* but commonly the workman in either line is called a carpenter. The tools of a carpenter include saws, planes, gouges, mortise chisels, squares, bevels, augers, brad awls, and many others. Carpentry has been greatly changed by the introduction of labor-saving machinery. Much of the material for building is now bought in a prepared form at planing mills and at blind, sash, and other factories. Doors, stair railings, windows, ornamental trimmings, and many other parts are secured in complete form, instead of being made by hand as formerly. This is the natural result of employing improved machinery in cutting timber, which has likewise caused a saving in the cost of transportation to long distances from the sawmills located in forests or at points reached by rafting logs in streams. Formerly the carpenter cut the shingles with a hatchet from the block, now mills cut them by the thousands, or the wooden forms have been displaced by stone, slate, or metallic products. Paper is now used to a large extent in walls and asbestos is employed for deadening sound, while steel and iron are displacing the wooden and brick frames of former times. The general diversity of ornamentation has caused the invention of a large variety of machines, which have simplified the work in some lines, but, on the other hand, require greater skill in others.

CARPET (kär′pĕt), the name of a kind of felted or woven fabric, generally made of wool, used as a covering for floors and chambers, or for spreading on staircases and on the ground. The use of rugs was common in ancient Babylon, Egypt, China, and India. Carpet making has been an important industry in Persia, Turkey, India, and many portions of Eurasia for centuries, and many laborers are engaged at present in its production. The use of carpets was introduced into Western Europe at the time of the Crusades, but, even in the time of Queen Elizabeth, the floors of palaces and residences were strewn with rushes. The practice of decorating walls with tapestry and cloth is much older than the carpeting of floors. For several centuries, particularly in the time of Thomas Wolsey, the walls were covered with tapestry while the floors were bare. The manufacture of carpets was introduced in Germany and France about 1606, and in England by the French in 1750. Wool is the principal article used in the manufacture, though hemp and vegetable matting are employed extensively.

Among the different grades of carpet are the varieties known as *Brussels, Venetian, Dutch, Wilton, Axminster, Chinese,* and *tapestry.* Axminster carpet is on the style of the Turkish, in one piece, the patterns consisting mostly of curved and angular strips, containing tufts of colored worsted designs and decorations in various colors. Brussels carpet was first made at Brussels, Belgium, but is now manufactured extensively in all countries. It is woven on a loom carrying a shuttle which raises portions of colored yarn to the surface, and the linen basis is concealed by the worsted, which is drawn through the reticulation and looped over wires, which are afterward withdrawn, thus giving the surface a ribbed appearance. The machinery used in manufacturing Brussels carpet is very complex. Wilton carpet is made similarly to the Brussels, but, instead of being drawn out, the loops are liberated by passing a sharp knife into the grooves, thus producing a velvet pile surface instead of looped threads.

Felt carpet is made by printing colors on felt. Hemp carpet is used in the more inferior buildings and stairways. Many offices and chambers are now furnished with a carpet made of matting in which a vegetable growth from the South Seas is utilized, while others are decorated with a class of oilcloth. Philadelphia is one of the most extensive carpet producing cities in the world. The largest output of carpets in the United States is in the east central states, while the finest rugs are made in Western Asia. As a whole, the United States takes the first rank in the production of carpets; Canada, second; Germany, third; and France, fourth.

CARPETBAGGERS (-băg-gẽrz), the name applied to a class of northern people who settled in the Southern States after the close of the Civil War with the view of controlling the political affairs in that section of the United States. It was first used in reference to the northern politicians who had an ambition to become members of Congress, hence these men removed to the Southern States. They were called carpetbaggers from the circumstance that many of them brought only their wearing apparel in baggage. The term is now applied to all of the northern adventurers who sought political influence during the reconstruction period, from 1865 until 1876. At that time many of the leading white citizens were not permitted to vote, and the county, district, and State politics were controlled by carpetbaggers, who were assisted by the Negroes. This régime was known as *carpetbag government.*

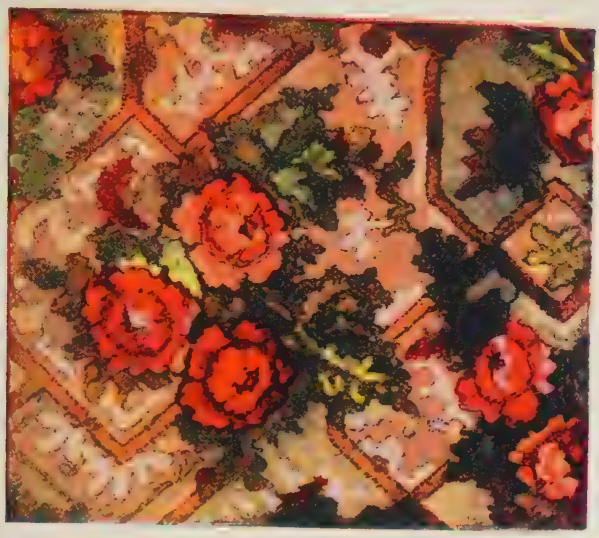
CARPET BEETLE, a small bug or moth which infests houses and preys upon carpets and other cotton and woolen fabrics.

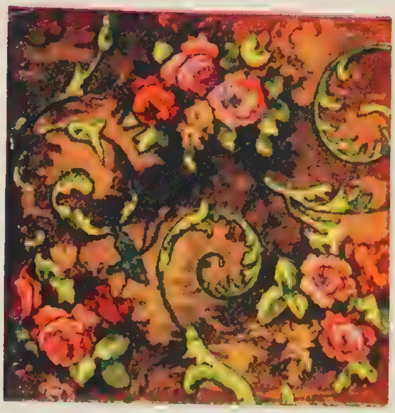
CARRACCI. See **Caracci.**

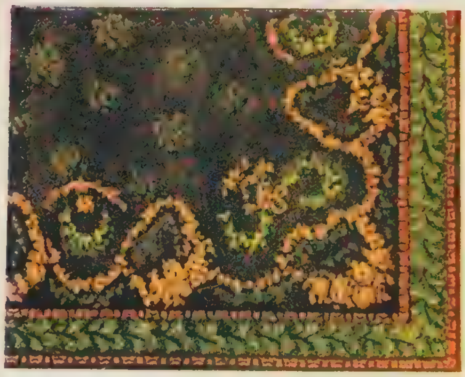
CARRANZA (kär-rän′thä), **Venustiano,** general and statesman, born Sept. 18, 1860; died May 20, 1920. He owned large estates in northern Mexico, where he exercised a wide influence in education and finance. A supporter of President Madero, he was made governor of the state of Coahuila. In 1912 he began a propaganda against the government of President Huerta and became head of the Constitutionalists, as the followers of Madero were called. He was formally recognized as president in 1915 by the United States and six leading countries of South America. At first he favored and afterward opposed the coöperation of the United States, which had dispatched a force against Francisco Villa. The country continued to be threatened by revolutions throughout his administration.

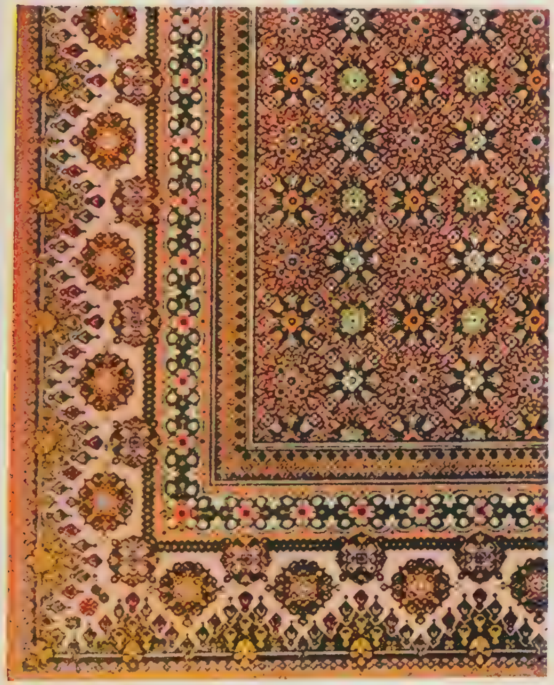
CARRARA (kä-rä′rȧ), a city of Italy, in the province of Massa e Carrara, sixty miles southwest of Modena. It is located on the Avenza River, three miles from the Mediterranean, and is surrounded by hills famed for their white marble. The chief buildings include the churches of the Madonna and of Saint Andrea, and in the city are fine statues of Rossi, Mazzini, and Garibaldi. It has a fine museum and an academy of sculpture founded by Napoleon. The Carrara quarries have been worked since an early period in Roman history, and at present there are more than 600 quarries in the vicinity of the city. Most of the product is exported via Avenza. Population, 1922, 21,560.

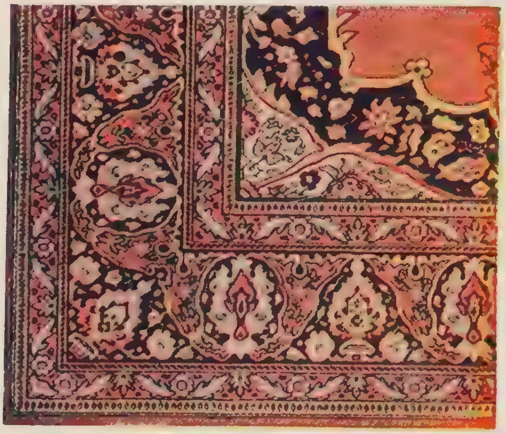
CARRIAGE (kăr′rĭj), a name generally applied to all structures employed to transport merchandise and passengers. In the United States the name refers particularly to wheeled vehicles for carrying persons to distinguish them from those used for transporting goods. It is especially applied to an elegant conveyance, partly or wholly enclosed, with seats for two or more persons and drawn by one or more

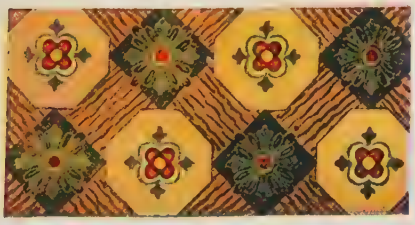


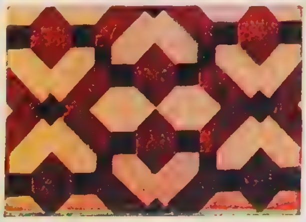


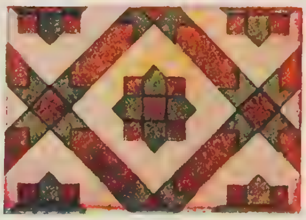












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COVERINGS FOR FLOORS.

Axminster Carpet.

Wilton Rug.

Brussels Carpet.
Axminster Rug.
Brussels Rug

Three designs of linoleum.

horses. The term is loosely applied to such vehicles as top buggies, broughams, and phaetons. In Great Britain the term is applied to railway cars and often preceded by the name designating the class, as first-class or second-class carriage.

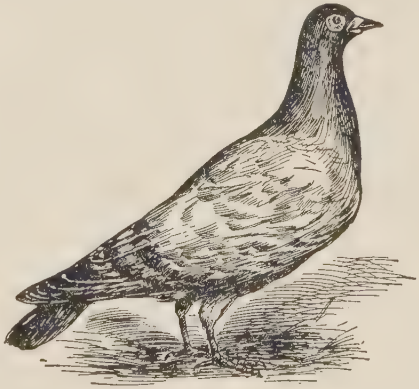
The most ancient conveniences for transportation were, no doubt, by riding animals, as camels, elephants, and horses. We learn that Pharaoh gave Joseph second place in Egypt and "he made him ride in the second chariot which he had," and later wagons were sent to convey Jacob and his family to Egypt. Chariots were generally used by rulers and warlike leaders in Egypt, while in Rome they were employed for general use. The Roman carriages were richly ornamented, some drawn by two and others by four horses. In the Olympic games of Greece the chariot was a necessary supply. The condition of the roads had a material modification on early vehicles. The celebrated Appian Way, constructed in Rome in 331 B. C., and many other thoroughfares, were especially fitted for the use of chariots. Covered carriages came into use in the 16th century, at first among the nobles, but later were generally adopted as conveyances by all classes of citizens. Their use was greatly opposed by the owners of boats and the carriers of sedan chairs. In some cases the sovereigns were induced to forbid their employment by the citizens and their wives, of which the ordinance of Philip the Fair, in 1294, is a notable instance. In 1550 there were only three carriages in Paris, the noblemen and citizens riding mostly on horseback. They came into general use in Germany as early as 1613. Hackney coaches were introduced in London in 1625.

The early vehicles were extremely rude, particularly the heavy wagons used for transports. Many had rude axles with wooden wheels cut from large logs, and in this respect were similar to those now rarely used in Mexico. At the beginning of the 18th century the body of carriages was suspended by leather straps. In 1804 an Englishman, Obadiah Elliott, invented the oval springs which are in common use at present. The general forms of carriages now used in Western Europe are similar to those seen in Canada and the United States, but many have been modified or improved. The *buckboard, sulky, rockaway,* and *buggy* are distinctly American vehicles. The *jinrikisha* is a two-wheeled cart pulled by a man, and is commonly used in Japan and Eastern Asia. Among the newer means of conveyance are the bicycle and automobile, which are extensively used in many countries. See **Automobile, Bicycle,** etc.

CARRIER (kăr′rĭ-ẽr), a person or company that undertakes to carry or makes a business of carrying persons or goods for a consideration. Two classes of carriers are recognized—*private carriers* and *common carriers.* Private carriers are persons who undertake to transport the goods of others who may choose to employ them, yet they do not enter into the employ of the public generally. A private carrier incurs no responsibility beyond that of ordinary diligence. Common carriers are persons or companies who engage to carry goods for the general public in consideration of a suitable compensation. They are required to provide safe and suitable conveyance, and are not exempt from responsibility, even if interfered with by ice, snow, fire, or other natural causes. They are responsible for all losses, except from the act of an enemy in times of war or the default of shippers.

In many cases the responsibility of common carriers is limited or modified by special contract, but under the general law they cannot free themselves wholly nor escape the duty of reasonable diligence. The common carrier is responsible for the acts of all his agents, must deliver commodities in as good condition as received, may refuse to accept goods not properly prepared for shipment, and may demand transportation charges in advance. In cases where charges are payable at the end of the route, the goods may be held until payment is made, and, if entirely neglected, the goods may be sold to cover a part or all of the transportation charges and storage. In making shipments the sender need not disclose the contents of his package unless requested to do so by the carrier. If the sender misrepresents the value or character of the goods, the carrier is not liable in case they are stolen. Railroad, hack, steamboat, and street railway companies are common carriers.

CARRIER PIGEON, a name applied to a species of pigeon used for conveying letters from any place to their home, now generally called *homing pigeon.* The common carrier pigeon is a large bird with naked skin at the base of the beak and long wings, and has a circle of naked skin around the eyes. It is thought that the Chinese were the first to make use of pigeons in this way, but the oldest instance on record is that of the 16th century B. C., when Joshua invaded Palestine and em-



CARRIER PIGEON.

ployed this mode of communication between the camps on different sides of the Jordan. The Greek lyric poet Anacreon mentioned the use of carrier pigeons in the year 500 B. C. Pliny the Elder called attention to the value of homing pigeons in several sieges conducted by the Roman army. In the siege of Paris by the German army, in 1870-71, fully 150,000 official messages were carried into the city by means of pigeons. Various uses of trained carrier pigeons constitute a national game in Belgium and Holland, and they are kept for pleasure and military purposes in many European countries.

A pigeon flies about 30 to 40 miles an hour under favorable circumstances, and is successfully used for distances from 200 to 500 miles, though there are cases on record in which they have been used for more than 1,000 miles. The homing faculty or instinct enables them to find their way home from surprising distances, and upon this virtue depends the value of these birds. Pigeons are trained for service by taking them a short distance from home and setting them free, gradually increasing the distance from time to time. By successive experiments the tendency to seek their former place of habitation is gradually developed, until finally they can be depended on to return from long distances. One of the best records ever made was by an American homing pigeon, which flew 1,040 miles without stopping. In the East, where the custom is general, the birds' feet are washed in vinegar to induce them not to alight in quest of water and to keep them cool. The message sent is microscopic. It is rolled in a goose quill, which is tied to a wing feather or a leg, though long-hand writing is frequently used for short distances.

CARROLL (kăr′rŭl), **Charles,** statesman, born in Annapolis, Md., Sept. 20, 1737; died in Baltimore, Nov. 14, 1832. He studied at the Jesuit College of Saint Omer and in Paris, Bourges, and London. He ranked as the wealthiest man in the colonies at the outbreak of the Revolution, and used his means to influence a sentiment favorable to the establishment of an independent government. In 1770 he was among the first to protest against arbitrary taxation. Soon after he became one of the Committee of Correspondence, and in 1775 was elected a member of the Council of Safety. He was made a member of the Continental Congress in 1776, representing Maryland, and became a signer of the Declaration of Independence. The next year he was again elected to Congress, serving on the committee to investigate certain charges made against George Washington, for which purpose he visited Valley Forge. In 1788 he was made first Senator from Maryland under the Constitution, serving three years, and in 1801 became a member of the State Senate. He was as progressive in business enterprises as in public affairs, opening the Baltimore and Ohio Railroad July 4, 1828. Carroll was the last surviving signer of the Declaration of Independence.

CARROLL, John, Roman Catholic archbishop, born at Upper Marlboro, Md., in 1735; died at Georgetown, D. C., Dec. 3, 1815. He established the Georgetown College in 1788, the Saint Mary's in 1792, the Saint John's at Annapolis, and the cathedral at Baltimore. Soon after he was made archbishop On Feb. 22, 1800, he delivered a festival oration on Washington at the invitation of Congress.

CARROT (kăr′rŭt), a plant cultivated for its root, belonging to the parsley family. It is a biennial plant. In the wild state the root is white, while the domesticated carrot is of a yellow or reddish color. The root differs somewhat in the numerous species, but is generally long and tapering and matures on the approach of cool weather. The seed is sown in beds early in the spring, usually in rows about one foot apart, and the plants are afterward thinned. Carrots are used chiefly in soups and stews, especially in America, and in many European countries they are cultivated as feed for cows. They yield at the rate of 500 to 1,200 bushels per acre, and produce an excellent quality of butter with a bright color. The carrot is used in Canada and the United States for adulterating coffee, and in America and Europe more or less extensively as an article of food.

CARSON (kär′sŭn), **Christopher,** commonly known as *Kit Carson,* frontierman and hunter, born in Madison County, Kentucky, Dec. 24, 1809; died at Fort Lynn, Colo., May 23, 1868. His family removed to Missouri while he was young. At the age of seventeen years he he joined a hunting party. John C. Frémont engaged him as a guide across the Rocky Mountains. Being able to speak the Indian dialect fluently, he assisted in making various treaties, and later became an Indian agent in New Mexico. For gallant services in the Civil War he was made brigadier general. Many interesting stories have been published of his adventures.

CARSON, Sir Edward, statesman, born in Dublin, Ireland, in 1854. He graduated at Trinity College and was elected to the British parliament in 1892, where he was prominent in debate and as an opponent to Home Rule. In 1915 he was made attorney general, resigning within the year, and later became first lord of the admiralty, which he relinquished in 1917. He served efficiently as a member of the war cabinet.

CARSON CITY, the capital of Nevada, county seat of Ormsby County, thirty miles south of Reno, on the Virginia and Truckee Railroad. It is located near the base of the Sierra Nevada Mountains, in a district which is rich in gold and silver deposits, about twelve miles from Lake Tahoe. The chief buildings include the capitol, the county courthouse, the United States mint, and the Federal building. It has extensive railroad shops, a foundry, and the State Orphans Home. The city was founded in 1858 and became the capital of Nevada in 1861. It was incorporated in 1875. Population, 1900, 2,100; in 1920, 1,685.

CARSON RIVER, a stream in Nevada, rises in the Sierra Nevada Mountains, and after a course of about 150 miles flows into Carson Lake. Its general direction is toward the northeast, passing a short distance south of Carson City, and a branch of it in the lower course flows into Carson Sink. Carson Lake has no visible outlet. The water from this stream is used in the Truckee-Carson irrigation system. See **Irrigation.**

CART, a vehicle with two wheels, usually without a top, and fitted to be drawn by one horse. Heavy carts have no springs and are employed in hauling heavy freight or rocks, while vehicles of light construction are used in driving. The latter are supplied with springs and frequently with a top or canopy. The one-horse cart is employed extensively in Europe for draying, usually in the form of a dump cart, from which the load may be removed by tilting the body of the vehicle. A dogcart is constructed so the frame may be adjusted to balance the load, and a trotting sulky is used in horse racing. The gig is a two-wheeled cart with a single seat. In the calash, used more or less in Canada, the driver has a low seat in the front. Carts with wheels made of cuts from logs are used extensively in Central America and the West Indies.

CARTAGENA (kär-tȧ-jē'nȧ), or **Carthagena,** a city of Colombia, on the Caribbean Sea, capital of the state of Bolivar. It is located on a peninsula and has a fine harbor, but the low coast makes it unhealthful to Europeans. The chief buildings include those of the government, a college, a cathedral, a seminary, and several churches. Among the manufactures are candles, clothing, and chocolate. It has a large export trade in tobacco, cattle, coffee, rubber, and precious stones, and imports merchandise and machinery. The city was founded in 1533 and was captured by Spain in the revolution of 1815. Population, 1922, 19,380.

CARTAGENA, a seaport in Spain, on the Mediterranean Sea, about twenty-eight miles southeast of Murcia. It is an important naval and military station, and its harbor is one of the safest and largest on the Spanish seacoast. It has manufactures of glass, cordage, wine, and machinery, and exports of iron ore, lead, esparto grass, and fruits. The chief features are the arsenal, the Presidio, the Hospital Militar, a Gothic cathedral, several hospitals, and a number of schools. It has steam and electric railways, waterworks, stone pavements, and systems of gas and electric lighting. Cartagena was founded by Hasdrubal about 243 B. C. and was named New Carthage. In 210 B. C. it was conquered by Scipio Africanus and made an important Roman city. The Goths ruined it, but in the time of Philip II. its importance was revived. Population, 1920, 106,802.

CARTAGO (kär-tä'gō), a town of Costa Rica, capital of a province of the same name, fourteen miles southeast of San José. It has railroad connections with the principal cities of Central America and a brisk trade in coffee and fruit. An earthquake destroyed many of its buildings in the latter part of the 19th century and civil wars caused it to decline. Population, 1922, 5,502.

CARTERET (kär'tẽr-ĕt), **John, Earl Granville,** orator and statesman, born in Bedfordshire, England, April 22, 1690; died Jan. 2, 1763. He studied at Christ Church, Oxford, and in 1711 became a member of the House of Peers, where he favored the Protestant succession. George I. gave him a number of lucrative appointments. He was ambassador extraordinary to Sweden in 1718-19, and the following year negotiated a peace treaty between that country and Prussia. In 1721 he was made Secretary of State and three years later became Lord Lieutenant of Ireland. He was an opposition leader in the House of Lords against Robert Walpole, was made Earl of Granville in 1744, and five years later was made Knight of the Garter at Windsor. He was a patron of literature and an orator of learning and classical attainments.

CARTHAGE (kär'thȧj), a city in Missouri, county seat of Jasper County, on Spring River, fifty-eight miles west of Springfield. It is on the Saint Louis and San Francisco, the Missouri Pacific, and other railroads, and is surrounded by a coal, lead, zinc, and cobalt producing region. The chief buildings include the courthouse, the public library, and Ozark Wesleyan College. It has manufactures of plows, windmills, furniture, flour, ice, clothing, and machinery. Among the municipal improvements are sewerage, waterworks, pavements, and gas and electric lighting. On July 5, 1861, it was the scene of a battle between the Union army under General Sigel with 1,500 and the Confederates under General Price and Governor Jackson with 3,500 men. The battle resulted in a retreat of Sigel's army. Carthage was settled in 1833 and was incorporated in 1873. Population, 1900, 9,416; in 1920, 10,068.

CARTHAGE (kär'thĭj), the most celebrated Phoenician colony, founded by Queen Dido about 880 B. C., who came thither with a body of aristocrats, fleeing from the democratic party of Tyre. It was located in Africa, occupying a portion of the region now included in Tunis. Queen Dido fled from Tyre after the murder of her husband. She built up a colony around which great commercial interests centered, and the city of Carthage rose to vȧst importance among the ancient cities in Northern Africa. The population of the city before the time of its destruction was about 700,000. It was built on a peninsula about three miles wide, across which was constructed a triple wall with lofty towers. Every side of the city was defended by a wall. The Punic traders brought immense wealth, thus resulting in the construction of massive buildings and in lavishing them with magnificent adornments. A double harbor served for merchants' ships and for the navy. The admiral's palace occupied a lofty island in the center of the inner harbor. At the time of its greatest prosperity Carthage occupied a site twenty-three miles in circumference, with a population probably greater than that of ancient Rome. Its navy was the largest in the world; at the time Regulus made his famous attack on Carthage it consisted of 350 vessels and 150,000 men.

The Carthaginians conquered Sardinia in the 6th century B. C. and entered upon a war for the possession of Sicily. They founded colonies on the western coast of Africa, contended for the possession of the Strait of Gibraltar, and invaded Spain and Gaul. The history of this powerful nation is divided into three epochs for convenience in study. The first extends from its foundation to 410 B. C., and includes the rise and development of national power. The second extends from 410 to 265 B. C., and embraces the period of wars with Greece and Sicily. The third epoch embraces the period from 265 to 146 B. C., and includes the wars with Rome, ending with its fall and destruction. In the first period colonization was widely extended and treaties were made with other powers. Among the most famous were those concluded with Rome in 509 B. C., in 348, and in 306. Its people were noted for their interests in commercial enterprises and the early wars were but the natural result of an extending commerce and colonization. The first Punic War extended over twenty-three years, from 264 to 241. It was a period of contention for the occupation of Sicily and resulted in the expulsion of the Carthaginians from the island. What Carthage lost in Sicily was more than regained by the conquest of Spain under the skillful military achievements of General Hamilcar and his son-in-law, Hasdrubal.

After the death of these two distinguished generals, Hannibal, the son of Hamilcar, took charge of the army and rose to eminence, establishing for himself a place among the most noted generals of the world. He organized the forces of Carthage in Spain and entered upon the second Punic War in the year 218 B. C., when he crossed the Alps with a powerful army and proceeded into Italy. His successes astounded the world, routing the best soldiers of Rome and gaining victories at Lake Trasimeno, Trebbia, and Cannae. For seventeen years he harassed Rome and brought it to the verge of ruin. After the Battle of Cannae, he sent a bushel of gold rings to Carthage, the ornaments of Roman knights. One-fifth of the Roman populace able to bear arms had fallen within eighteen months, while Capua, the second city of importance, joined Hannibal. In the hour of peril the Roman spirit rose and Hannibal's victories began to ebb. He was recalled to defend his own city, where he was defeated by Scipio in the Battle of Zama in 202 B. C.

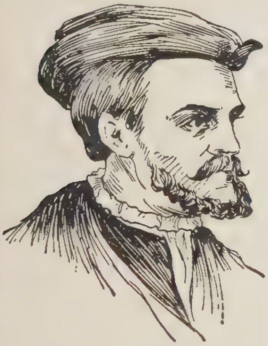
Peace was concluded between the two nations, but the power of Carthage was broken, never again to rise to its former height. Although the nation began to recover its importance in commerce, a party at Rome was bent upon its destruction. The third Punic War began in 150 and ended in 146 B. C., in which Rome was the aggressor. The Carthaginians surrendered their arms, but when bidden to leave the city to be razed they were driven to desperation. They melted their gold and silver vases and their metallic statues to forge them into new weapons. The long hair of the women was made into bowstrings, and all available material was used to contest every inch of the city against the Romans. The younger Scipio led the siege and after a desperate struggle captured Carthage. Though the city had flourished more than 700 years, it was utterly razed to the ground. The territory was turned into a Roman province and became one of the chief possessions of the Roman Empire. The Vandal kings of Africa made it their capital in the 5th century A. D. and at the end of the 7th century it was destroyed by the Arabs.

Very little is known of the laws, life, and customs of the people of Carthage. Both its constitution and history are obscure in many respects. It is known that no ancient people rivaled it in colonization and competition for trade. There is no fragment of a Punic orator, historian, philosopher, or poet to make known the events that characterized this wonderful people. Carthage is better understood from its wars than from the achievements in education, art, and industry. It is known that the Carthaginians descended from Phoenician ancestors and, like them, worshiped Moloch and Baal, to whom human sacrifices were offered. The sun was the highest natural manifestation of this deity, but they also worshiped the Tyrian Hercules and a variety of heroes, heroines, and spirits, such as the goddess of the elements and the genius of death. The language was similar to that spoken by the Asiatic Phoenicians, from whom they were descendants.

CARTHUSIANS (kär-thū'zhanz), a monastic order of the Catholic Church, founded by Saint Bruno of Cologne in 1084. It was so named from La Chartreuse, France, where the first hermitages were built. The order was approved by the Pope in 1170, and the name was corrupted into Charter Houses in England, where the first monasteries of this order were built in 1180. The rules of living are very austere, and the members are divided into monks and lay brothers. They abstain from eating flesh, are required to perform manual labor, wear coarse clothing, and take a vow of continual silence. The wine known as *chartreuse* was originated by them and from its manufacture they derive some revenue. Formerly this order had a large membership in Central Europe, but their austerity caused them to decline, and at present there is only one monastery in England, the one located near Brighton.

CARTIER (kär-tyȧ′), **Sir George Étienne,** statesman, born at Saint Antoine, Quebec, Sept. 6, 1814; died in England, May 20, 1873. He received a liberal education, was admitted to the bar in 1835, and in 1837 took a part in the rebellion, which obliged him to leave Canada for a time. He was elected to the Canadian Parliament in 1848 and in 1857 became attorney general for Lower Canada. In 1858 he was named Premier, and was instrumental in effecting many reforms. Cartier ranks as a prominent leader in the French-Canadian Conservative party.

CARTIER, Jacques, famous navigator, born at Saint Malo, in Brittany, France, Dec. 31, 1494. Francis I. commissioned him to command an expedition to explore America. He set sail for America in 1534, cruised on the coast of Newfoundland, explored the Straits of Belle Isle, and claimed Canada for the French. In 1535 he explored the region near the modern city of Montreal, and in 1541 made a third voyage, when he built a fort near the site of Quebec and founded a permanent settlement. Nothing definite is known of his later life, and the last information regarding him is that he was living in France in 1552. It is thought that he died in 1557.


JACQUES CARTIER.

CARTILAGE (kär′tĭ-lȧj), or **Gristle,** an an elastic substance or texture occurring in vertebrate animals. There are two forms, the *temporary* and the *permanent.* The former is present in place of bone in very early life and later changes to bone by ossification; the permanent cartilage retains its cartilaginous character. Temporary cartilage is found at the ends of bones, where they enter into the formation of joints. The permanent cartilage consists of the *articular* and the *membraniform.* The former is found at the joints and the latter in the walls of cavities, as the nose, external ear, and larynx.

CARTOON (kär-tōōn′), a term now generally applied to pictorial sketches published in newspapers and magazines. They are intended to convey a vivid or exaggerated view of some important event or notable character. The term is applied in painting to designs drawn on paper, intended for models in transferring the figures to the fresh plaster of a wall. The most celebrated cartoons were painted by Raphael for the tapestries of the Vatican. Originally there were twenty-five of these famous paintings, but only seven are now extant. They are in the South Kensington Museum, London, and include representations of "The Death of Ananias," "Paul Preaching at Athens," and "The Miraculous Draught of Fishes."

CARTRIDGE (kär′trĭj), a case of metal, flannel, paper, or parchment containing an exact charge of powder and bullet, and fitting the bore of a gun. A *blank cartridge* contains only the powder. A cartridge filled with dynamite or other explosive is used in blasting. In breech-loading guns the cartridge case is metallic, or contains a metallic rim. A percussion cap is in the center base, or on the inner rim. Solid brass cartridges can be reloaded and used an indefinite number of times.

CARTWRIGHT (kärt′rīt), **Edmund,** inventor of the power loom, born in Nottinghamshire, England, April 24, 1743; died Oct. 30, 1823. His education was obtained at Oxford, and he became devoted to the ministry of the English Church and to literature. In 1784 he directed attention to the invention of labor-saving devices, and the next year exhibited his first power loom, a machine quite rude but ingenious in construction. His invention was opposed by laboring men, and 500 looms were maliciously and ignorantly burned, but later it proved of immense value. He secured a patent on a mechanical device for combing wool in 1790, and made numerous improvements in machinery for manufacturing textiles. The government granted him $50,000 on account of his inventions. Among his writings is a legendary poem, entitled "Arminia and Elvira."

CARTWRIGHT, Peter, clergyman, born in Amherst County, Virginia, Sept. 1, 1785; died near Pleasant Plain, Sept. 25, 1872. He descended from a soldier of the Revolutionary War, spent his early life in Logan County, Kentucky, was converted to the Christian faith at Cane Ridge in 1803, and began to preach as a regular minister of the Methodist Episcopal Church. He was appointed a presiding elder in 1812. In 1816 he attended the general conference in Baltimore, and subsequently was a delegate to a number of others. In 1823 he removed to Sangamon County, Illinois, where he was elected to the Legislature. He was the Democratic nominee for Congress against Abraham Lincoln in 1846, but was defeated by a majority of 1,500. A persistent worker, he baptized more than 12,000 persons and preached about 15,000 sermons. He was a man of much energy, power, and original thought, and his good sense operated to shape the policy of his denomination. Among his writings are "Controversy with the Devil," "Fifty Years a Presiding Elder," and "Autobiography of Peter Cartwright, the Backwoods Preacher."

CARTWRIGHT, Sir Richard John, statesman, born in Kingston, Ont., Dec. 14, 1835. He studied at Trinity College, Dublin, Ireland, and afterward returned to America. In 1863 he was elected to Parliament as a Conservative, but in 1870 became a leader of the Liberals. He took an important part in the public affairs of the Dominion and introduced and promoted many reforms, especially those bearing on finance and education. He died Sept. 24, 1912.

CARUSO (kä-ru'zō), **Enrico,** operatic tenor, born in Naples, Italy, in 1873. He sang successfully when eleven years old, chiefly in churches, and in 1896 filled engagements in the leading capitals of Europe. In 1904 he scored great successes at the Metropolitan Opera House in New York, where he sang many successive seasons. He likewise is well known by his phonograph singing. His chief rôles were in Franchetti's *Germania,* Massenet's *Sapho,* and as Manrico in *Il Trovatore.* He died Aug. 2, 1921.

CARVER (kär'vẽr), **John,** first Governor of Plymouth Colony, born in England in 1575; died in April, 1621. He left his native country for the sake of religion and established himself at Leyden, Holland, whence he accompanied the Pilgrim Fathers to Virginia, sailing in the *Mayflower* in 1620. After a dangerous voyage the colonists, numbering 101, arrived at Plymouth, where Carver was elected Governor by a unanimous vote. He managed the affairs of the infant colony with prudence and used tact in dealing with the Indians.

CARVING (kärv'ĭng), a kind of sculpture, usually done by cutting on ivory or wood. This art was practiced by the Assyrians and Babylonians, who carved in ivory and associated with it the practice of engraving in gems. Ivory was used largely for carving among the Grecians, especially in making the statues of the gods, in which the solid material was overlaid with plates of ivory. The art of wood carving came into extensive use during the early Christian period, and it was long a popular form of decorating the churches of Central Europe, especially in Germany. Among the famous carvers may be mentioned Albert Dürer, Hans Bruggemann, and Hans Schwartz of Augsburg. The churches in which famous carvings are well preserved include those of Nuremberg, Altenberg, and Erfurt. The carvings in some of the Lutheran churches are very elaborate, including scenes in the lives of Christ and the saints.

CARY (kā'rĭ), **Alice,** writer, born near Cincinnati, Ohio, April 20, 1820; died in New York City, Feb. 12, 1871. Her early education was limited. She began to write verse and prose for the press at the age of eighteen years. She removed to New York City in 1852, where she became known as a prolific writer. Among her best known works are "Story of To-day," "Married, Not Mated," "Clovernook Papers," "Lyrics and Hymns," "Snow-Berries," and "Pictures of Country Life."

CARY, Phoebe, writer, sister of Alice Cary, born near Cincinnati, Ohio, Sept. 24, 1824; died at Newport, R. I., July 31, 1871. Her first poems and hymns were written at the age of seventeen years. The beautiful hymn commencing "One Sweetly Solemn Thought" was among her first productions. Her life and works are closely associated with those of her sister, but show greater cheerfulness and spirit. Among her writings best known are "Hymns for all Christians" and "Poems of Faith, Hope, and Love."

CASCADE MOUNTAINS (kăs-kād'), a range of western highlands, forming the northern extension of the Sierra Nevada of California, and trending through Oregon, Washington, and British Columbia. Their direction is nearly north and south, and the distance from the Pacific coast averages about one hundred miles. The Cascades are of volcanic origin, though they are more recent than the Rocky Mountains. They are covered with fine forests of valuable timber. The lava cast up by volcanic action through the fissures and craters is deposited over an area of about 200,000 square miles, and in many places it forms a coat fully 2,000 feet thick. The surface is formed largely of decomposing lava, but it is very fertile and whitish in color, and furnishes good soil for grazing and agriculture. There are productive deposits of coal, copper, nickel, and platinum, and small quantities of silver and gold. West of these mountains, in the State of Oregon, is the fertile valley of the Willamette, and in Washington is a corresponding valley drained by the Chehalis and Cowlitz rivers. Among the most noted peaks are Pitt, elevation 9,820 feet; Jefferson, 10,200 feet; Hood, 11,225 feet; Baker, 10,700 feet; Saint Helen's, 12,000 feet; and Rainier (Tacoma), 14,450 feet.

CASCADE TUNNEL, an excavation through the Cascade Mountains, in Washington, constructed by the Great Northern Railway Company. It is sixteen feet wide, twenty-two feet high, and 13,413 feet long, about two and one-half miles. The excavations were difficult on account of much water and large boulders being in its course. It is lined almost exclusively with solid work of concrete, and comprises one of the notable engineering works of America.

CASCARILLA (kăs-kȧ-rĭl'lȧ), the bark of a small tree or shrub native to the West Indies and the Bahama Islands. It has a spicy, bitter taste, and is used in medicine as a tonic to aid digestion. *Cascarillin* is an essential oil obtained from the bark, which also yields a resinous product used in medicine.

CASCO BAY (kăs'kō), an inlet of the coast of Maine, between Cape Small Point and Cape Elizabeth. The shore is about twenty miles long, and at the western extremity is the city of Portland. Within the bay are about 300 small islands, most of which are fertile and are occupied by fishermen and summer residents.

CASE, in grammar, that form or use of a noun or pronoun by which its relation to other words in a sentence is denoted. Formerly the English language possessed inflections to indicate five different cases. At present the language contains only three cases, the *nominative, possessive,* and *objective,* though some writers include the *absolute.* The possessive form of nouns is the only case that is marked by inflections. In French, Spanish, Portuguese, and Italian the nouns have no inflections. The *nominative, dative, genitive,* and *accusative* are the cases in German grammar, while the Sanskrit has eight cases.

CASEIN (kā′sē̇-ĭn), the principal nitrogenous portion of milk. It is soluble in alkali, coagulates by animal membranes, and dries in a yellow mass. Casein is the principal constituent of cheese. Vegetable casein or *legumin* is a similar substance occurring in peas, beans, and the seeds of several other vegetables. Casein consists essentially of 0.8 parts of sulphur; 7.1 of hydrogen; 15.7 of nitrogen; 22.5 of oxygen; and 53.9 of carbon.

CASEMENT, Sir Roger, public man, born in Ireland in 1864. He studied in his native country and became a barrister. In 1895 he entered the consular service at Lorenço Marques, was transferred to the Congo Free State in 1898, and became consul at Santos, Brazil, in 1906. He was knighted for distinguished services to the British government. He felt strongly against England in the Great European War and undertook to land munitions of war on the coast of Ireland in 1916, but the cruiser in which he sailed was sunk and he was captured and sent to England to be hanged.

CASHEW (kȧ-shōō′), a tree native to the West Indies, related to the sumach and poison ivy. It is about sixteen feet high, has evergreen leaves, and bears kidney-shaped fruit, the cashew nuts of commerce. These nuts yield a sweet oil resembling olive oil, which is used to flavor wine and other liquids. The nuts are borne upon fleshy stalks, sometimes called the cashew apple, and these stalks are free from acridity. They are edible and have a pleasant, acid flavor.

CASHMERE (kăsh-mēr′), or **Kashmir,** an extensive principality in the northwestern part of Hindustan, governed by a Sikh ruler, but politically subject to British India, of which it forms a part. The districts included in it are Baltistan, Jammu, Ladakh, Cashmere, and a number of other minor divisions. It has an area of 80,500 square miles. The district including Cashmere proper is inclosed by the Hindu-Kush and Himalaya mountains and is drained by the Jhelum River.

The inhabitants belong chiefly to the Mohammedan religion, but include a considerable number of Brahmans. They engage largely in agriculture and the manufacture of ironware, baskets, furniture, and cashmere shawls. These shawls are made of the down common to the animals of the region, which surpasses in fineness and length the merino wool, and is obtained from the wild sheep, yak, and cashmere goat. The manufacture of a shawl of the best grade requires several weeks. This work is done mostly by women and girls. A number of different dialects are spoken. The people are strongly developed physically and are among the most intelligent and progressive of the Hindu races. Srinagar, or Cashmere, is the capital and largest town and the summer residence of the Maharajah. Population, 1922, 2,928,620.

CASHMERE GOAT, a kind of goat native to Asia, valuable for its long, silky hair. The best grade of this animal is obtained in Tibet and Cashmere, and it has been acclimated and is reared in all of the continents. It has nutritious flesh and gives rich milk, but is grown chiefly for its fleece. The hair is longer than that of the Angora goat, about eighteen inches in length, and a single goat does not yield more than seven or eight ounces of the down, beyond which extend the long hairs. It requires the fleeces of about ten goats to manufacture a shawl a yard and a half square. The male of the cashmere goat has large horns.

CASH REGISTER, a mechanical device used in stores and shops to record the cash received for goods sold. It is in general use in retail stores and in some of the larger shops and bazaars. This machine consists of a metallic box, supplied with a keyboard similar to that of a typewriter, each key being attached to a bar which registers the amount of the purchase and exhibits a tablet, showing the amount of the sale both to the customer and to the salesman. Amounts larger than those that can be shown by the machine are registered by pressing two or more keys in succession. A roll of paper within the machine is moved continuously by a system of wheels, and at the close of the day the various amounts recorded can be added to determine the total sales made at the store or in a certain department. The salesmen place the cash received in a drawer, and the total must agree with the sum of all the sales as recorded on the roll of paper, which is secured by a lock and key.

CASIMIR-PERIER (kä-zē̇-mẽr′-pȧ-ryȧ′), **Jean Paul Pierre,** statesman, born in Paris, France, Nov. 8, 1847; died March 12, 1907. He descended from a noted family and received an education for a political career. In 1870-71 he distinguished himself in the siege of Paris, and was awarded the cross of the Legion of Honor. He was elected president of France in 1893, as successor to Marie Carnot.

CASPER, the largest city in Wyoming, county seat of Natrona county, about 150 miles northwest from Cheyenne. It occupies an undulating site on the North Platte River and on the Chicago and Northwestern and the Chicago, Burlington and Quincy railroads. The surrounding country is one of the richest petroleum and natural gas producing regions of North America. The features include the post office, city hall, high school, several parks, and a number of interstate highways. The rapid growth of the city is due to its vast interests in the oil industries. Population, 1925, 23,288.

CASPIAN SEA (kăs'pĭ-an), an inland sea or lake in Eurasia, the largest in the world, having a breadth of 200 miles and a length from north to south of about 700 miles, with an estimated surface of 170,000 square miles. It is located on the boundary between Europe and Asia. On the eastern coast are a number of large bays. The western coast is more or less modified by the Caucasus Mountains; the southern, by the Elburz Mountains, and the northern and eastern, by the Kirghiz Steppe. A portion of the land north of the Caspian is below sea level, while the surface of the sea itself is 97 feet below the Black Sea and 250 feet below the surface of the Aral Sea. It is thought that the three lakes were once a common sea.

The Caspian Sea has no visible outlet to the sea. Its water is salty, though not as salty as that of the ocean. Among the rivers that flow into it are the Ural, the Terek, the Emba, and the Volga, the last mentioned being the largest river in Europe. Through the middle of the sea is a submarine ridge formed by a continuation of the Caucasus Mountains, which divides it into north and south basins. The greatest depth of the northern basin is 2,525 feet and of the southern, 3,250 feet, though both contain shallows that render navigation dangerous. It has salmon, sturgeon, and other valuable fisheries. It is the seat of a vast commerce. The most important ports on its coast are Astrakhan, Baku, Petrovsk, Derbend, and Krasnovodsk. A large number of railroads extend from it in all directions, and it is connected with many navigable rivers and canals. Among the important canals are those connecting the headwaters of the Volga with the Schlina and Tvertza rivers, by which the Baltic Sea is united with the Caspian. Russia has a number of fortifications on its coast and maintains a strong fleet and steamship lines for trading purposes. The sea is not affected by ebb or flood tides.

CASS, Lewis, statesman, born at Exeter, N. H., Oct. 9, 1782; died June 17, 1866 He studied at Marietta, Ohio, and entered the army soon after being admitted to the bar. In the War of 1812 he attained a reputation and rose rapidly to the rank of general. He settled in the region which is now included in Michigan, where he was appointed Governor in 1813, and later served as superintendent of Indian affairs for eighteen years. He took an active interest in the opening of the Northwest Territory, exploring lakes and the headwaters of the Mississippi, and treating with the Indians. General Jackson made him Minister of War in 1831 and in 1836 sent him as minister plenipotentiary to Paris, in which office he became popular by his replies to the attacks of the English press on the claims of the United States, which were published in *Galignani's Messenger.* The conditions involved in the final settlement of the northeastern boundaries by Daniel Webster and Lord Ashburton were so much opposed to his views that he resigned at Paris and returned to the United States. He was elected to the United States Senate from Michigan and served in that body from 1845 until 1857, and as Secretary of State under President Buchanan from 1857 till 1860. He was a candidate for the Democratic nomination for President in 1844 and 1852, but was defeated. In 1848 he was nominated, but was defeated for the election by General Taylor. Cass ranks as a man of much ability, scholarship, and force in public speaking. Among various works he published the following: "History, Tradition and Language of the Indians" and "France: its King, Court, and Government."

CASSANDRA (kăs-săn'drȧ), the princess spoken of by Homer as the fairest daughter of Priam and Hecuba. She was the twin sister of Helenus and with her fell asleep in the temple of Apollo, near Ilium, where two snakes licked her ears and caused her hearing to become so acute that she was able to hear the voice of the gods. Later Apollo was attracted by her beauty and taught her the secrets of prophecy, but laid upon her the curse that her prophecies should not be believed on account of her rejection of his suit. Her prophecies of the Grecian horse and the destruction of Troy were in vain, even though they were so important that they might have saved the Trojan city. When the city was captured, she fled to the temple of Minerva, but was carried off by the Locrian Ajax. Later she fell to the share of Agamemnon, to whom she bore twin sons, but was afterward murdered by Clytemnestra.

CASSATT, Alexander Johnston, capitalist, born in Pittsburg, Pa., Dec. 8, 1839. He was educated at the University of Heidelberg, Germany, and at the Rensselaer Polytechnic Institute, and engaged in local railroading in Georgia. In 1861 he entered the service of the Pennsylvania Railroad Company, for which he became superintendent of motive power and machinery. He was made general superintendent in 1870, general manager of the eastern division in 1871, director in 1883, and president in 1889. It is due to his efficient work that the Pennsylvania lines became consolidated, and he labored diligently to extend both the freight and passenger traffic. He died Dec. 28, 1906.

CASSEL (käs′sel), or **Kassel,** a city of Germany, capital of Hesse-Nassau, ninety miles northeast of Frankfort-on-the-Main. It is pleasantly situated on both sides of the Fulda River, has important railway and electric line connections, and is the seat of extensive manufactures of ironware, locomotives, machinery, and scientific instruments. The public institutions include two gymnasia, several high schools, and a number of hospitals and charitable institutions. It has a large trade in merchandise and manufactured products. The city operates and owns the gas works, a slaughterhouse, and an electric-light plant. A short distance west of the city is the Palace of Wilhelmshöhe, erected in the 18th century, in which Napoleon III. was imprisoned at the close of the Franco-Prussian War.

Königsstrasse is the principal street, which is beautifully paved, and near the center is the famous Königsplatz. Friedrichsplatz, one of the largest squares in Germany, is in the center of a large number of famous buildings, including the Electoral Palace and the Museum Fridericianum. The latter contains the provincial library of 170,000 volumes, of which the Grimm brothers were librarians from 1814 to 1830. In this library is the valuable poetic production known as Hildebrandslied, dating from the 9th century. The art gallery, constructed of red sandstone, is one of the finest buildings in the city, and contains a collection of paintings gathered by Langrave William VIII. The city was anciently known as Chassala. In the Seven Years' War it was captured by the French, and became the capital of the kingdom of Westphalia in 1807. It was occupied by the Prussian troops in 1866 and made a part of the kingdom of Prussia. Its modern prosperity is due largely to its material development in manufacturing and wholesaling. Population, 1905, 120,467; in 1920, 153,078.

CASSIA (kăsh′ȧ), a genus of plants of the pea family, including herbs, shrubs, and trees. Several species are known for their leaves, which, when dried, constitute the drug called *senna.* These plants are native to Africa and Asia, but an American species quite similar has the cathartic properties of senna in a mild form. The *cassia fistula,* a tree native to Egypt and India, yields the purging cassia, which contains considerable sugar and is used in making laxative conserves. The familiar *cassia bark,* or *cassia wood,* is derived from a tree of the laurel family, and is sold in the market as a cheap grade of cinnamon. It is obtained in large quantities from China. The fragrant bark mentioned in the Bible is supposed to be the cassia bark.

CASSIMERE (kăs′sĭ-mēr), a word derived from the cashmere manufactured in the Himalayas from the fine wool of the cashmere goat. It is applied to a dress fabric made of soft, fine wool. Cashmere is made into shawls, but the cassimere of European and American manufacture is used largely for men's wear.

CASSINI (käs-sē′nê), **Giovanni Domenico,** astronomer, born near Nice, France, June 8, 1625; died Sept. 14, 1712. He studied at the college of Jesuits, Genoa, and in 1650 became professor of astronomy at the University of Bologna. In 1665 he discovered the period of Jupiter's rotation, and soon after published an account of the movements of the satellites of Jupiter. He is the discoverer of four of the satellites of Saturn. In 1684 he explained the causes of lunar vibration. He died in Paris, where he had charge of an observatory erected by Colbert.

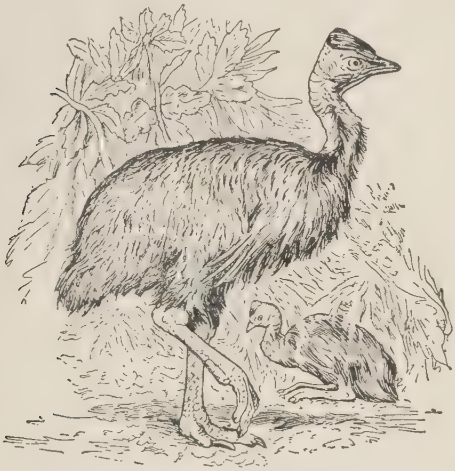
CASSINO (kăs-sē′nô), a game played with a full pack of cards, by two or more persons. Each of the players receives four cards, dealt in succession, and four are laid on the center of the table with the face turned up. To secure a full understanding of the game, it is necessary to consult the rules. In one variation of cassino, the jack, queen, and king are treated as pit cards, that is as if they had eleven, twelve, and thirteen spots. The game consists of scoring the highest number of points, usually twenty-one, hence several deals are required for one game. The points that count one each are: each ace, the two of spades, the greatest number of spades held by an individual player, and a *sweep* (which signifies that a player can take all the cards from the table except in the last hand); the ten of diamonds counts two; and the greatest number of cards held by an individual player counts three, making a total of twelve points to each deal. The two-spot of spades is known as *Little Cassino* and the ten-spot of diamonds is called *Big Cassino.*

CASSIOPEIA (kăs-sĭ-ô-pē′yȧ), in mythology, the wife of Cepheus, a mythical king of Ethiopia, and the mother of Andromeda. The term is applied in astronomy to a northern constellation, representing a queen seated on her throne. On the right is Cepheus, the king; on the left is her son-in-law, Perseus; and above her is her daughter, Andromeda. There are fifty-five stars in the constellation, five of which are of the third magnitude. They are arranged in the form of a W. The constellation is often spoken of as the "lady in the chair."

CASSIQUIARI (käs-sē-kē-ä′rē), a river of southern Venezuela, which unites the Orinoco with the Rio Negro. At the point where it issues from the Orinoco it is 300 yards wide, and it gradually increases in breadth until it reaches the Rio Negro, where it has a width of 600 yards. This remarkable river connects the Amazon River with the Orinoco and furnishes a passage for vessels between the two great river systems.

CASSIUS LONGINUS (kăsh′ĭ-ŭs lŏn-jī′nŭs), **Caius,** Roman statesman, best known by his prominent part in the assassination of Caesar. His early life is not known. He served under Crassus in the Parthian campaign in 53 B. C. and displayed much skill and courage. Though a tribune of the Plebs, he opposed Caesar and sided with the aristocratic faction and Pompey. Caesar took him prisoner, but later pardoned him and made him a legate. He afterward raised him to high office, but Cassius was won by Brutus to enter into a conspiracy to assassinate his benefactor in 44 B. C. Public indignation broke out at Caesar's funeral against the assassins. The military power falling into the hands of Mark Antony, Cassius fled to Syria, where he made himself master. His forces were united with those of Brutus. They crossed the Hellespont in 44 B. C. and took up a strong position near Philippi, where the army under Octavianus and Antony was thrown against them. Brutus succeeded in repulsing the army of the former, but Cassius was defeated by Antony, and, thinking all was lost, he compelled Pandarus, his freedman, to put him to death in the year 42 B. C.

CASSOWARY (kăs′sô-wâ-rȳ), a bird allied to the ostrich and the emu. It differs from the ostrich in having shorter wings, a bony crest, and wattles on the naked neck. It is native to New Guinea, the Moluccas, and many other Asiatic islands. The cassowary is distinguished from the emu by various characteristics, and possesses points of similarity with the moa and other extinct birds. Its wings are unfitted for flight, owing to their shortness, while its legs are powerful and well designed for swiftness. The feathers resemble pendant hair, the color is brownish-black, and the neck is naked, with the upper parts of a bluish color. The eggs are laid on the sand, where they are hatched by the sun. The flesh is juiceless, tough, and black. It is rarely eaten, except by the natives. Its food consists of leaves, seeds, and fruits.


CASSOWARY.

CAST, an impression made by pouring a ductile substance like plaster of Paris into a mold. The substance hardens on cooling and when taken out retains the form of the mold. Casts are of value in studying art, especially since the works of great masters cannot be seen by all. Many of the finest figures of antique art have been cast. These casts constitute the larger part of many museums.

CASTAIGNE (kȧ-stån′), **Andre,** artist, born in Angoulême, France, in 1861. He studied in his native town and in Paris. Later he took special lessons at the Beaux-Arts, and in 1884 made his first exhibit of pictures at the Salon. In 1890 he came to Baltimore and was made director and instructor of the Charcoal Club, a school of art in that city, and the following year illustrated western scenes in the *Century Magazine.* In 1894 he returned to France as instructor in the Colorossi Academy, Paris, where he labored successfully a number of years. He demonstrated much ability in executing oil paintings and engravings, and in the use of the pen and charcoal. His "After the Combat" was exhibited at the Peabody Art Gallery, Baltimore, and a number of his paintings were in the Columbian Exposition in Chicago. Among them were "Scenes of Cowboy-Life" and other illustrative works dealing with western subjects.

CASTALIA (kăs-tā′lĭ-ȧ), a fountain famous in the history of ancient Greece. It is located at the foot of Mount Parnassus, near the temple of Apollo, sacred to Apollo and the muses. The Pythia used to bathe in its waters before delivering the oracles of the gods. It was regarded as a source of inspiration for the poets and was so named from Castalia, the daughter of Achelous. It is now called the fountain of Saint John.

CASTE (kȧst), the artificial division of society on the basis of wealth, heredity, and other conditions. The caste system reaches its culmination in India, where society is divided into many classes. The principal castes include the *Brahmans, Kshatruyas, Vaisyas,* and *Sudras,* besides the *Pariahs,* or *outcasts,* who are regarded as of no caste. These castes are again divided into subcastes, the object being to make position or employment hereditary. See **India, Buddhism, Brahmanism,** etc.

CASTELAR (kăs-tâ-lär′), **Emilio,** orator and statesman, born at Cadiz, Spain, Sept. 8, 1832; died May 25, 1899. His education was secured at Madrid, where he was chosen professor of philosophy and general history in the university in 1856. He became a member of the revolutionary party, and, after its defeat in 1866, fled to France for safety, but returned to Spain two years later. When King Amadeo abdicated in 1873, he became minister of foreign affairs and later president of the Cortes. He again fled to France in 1874 on the return of Alfonso XII., but returned two years later, when he was again elected to the Cortes. Castelar ranks as one of the most progressive men of Spain. He exercised much influence in its educational work, published several books on history and politics, and contributed to a number of periodicals.

CASTELLAMARE (kȧs-tĕl-lȧ-mä'rȧ), a city and seaport of Italy, in the province of Naples, sixteen miles southeast of Naples. It is important as a railway and commercial center, and the surrounding country is noted for its beautiful springs and healthful climate. A fine cathedral, a royal palace, a military hospital, and several convents are among the chief buildings. The manufactures include clothing, machinery, and silk and cotton textiles. It has considerable trade, both export and import, and its fisheries are important. The city was anciently known as Stabiae. It was captured by Sulla in the Social War, and was destroyed by lava from Pompeii in 79 A. D. The castle was erected by Frederick II. in the 13th century. Population, 1916, 33,250.

CASTELLAMARE DEL GOLFO (-dĕl gôl'fō), a seaport of Sicily, on the Gulf of Castellamare, forty-five miles west of Palermo. It is situated near the mouth of the San Bartolomeo River. It occupies the site of the ancient Segesta. The commerce consists chiefly in grain, oil, fruit, wine, and fish. It is the seat of several fine schools and has a cathedral. Population, 1922, 20,175.

CASTIGLIONE (käs-têl-yō'nȧ), **Baldassare,** author and statesman, born at Casanatico, Italy, Dec. 6, 1478; died Feb. 2, 1529. He studied at Milan and began life in the military service, but soon became a diplomat and was sent on important missions to Germany and France. His skill as a diplomat caused him to become a favorite of Pope Leo X., who made him one of the ornaments of his court. Subsequently he was sent to Spain, where he became naturalized and was made Bishop of Avila. He published "Book of the Courtier," in which is set forth the ideals of the perfect courtiers.

CASTILE (käs-tēl'), a region extending southward from the Bay of Biscay, and forming the center of the Spanish monarchy. It is divided into Old Castile and New Castile, both from the standpoint of geography and politics. Old Castile forms an elevated plateau from 2,500 to 3,000 feet high, surrounded on all sides by mountains, watersheds, and other natural demarkations. It has an area of 25,810 square miles, is divided into several provinces, and has a population of 1,785,325. New Castile is similarly inclosed by elevations. It has an area of 44,720 square miles and is divided into five provinces. Population, 1,876,350.

CASTING, the art of forming metal in a mold. It is thought that the art of shaping metal by means of hammer and chisel is much older than that of casting. However, casting is of great antiquity, which is evidenced by a number of historical accounts, among them the incidents connected with the golden calf and the brass vessels cast for Solomon's temple. John Thomas in 1709 introduced into Scotland an effective method of casting iron and carried out the art successfully, but kept it a secret for many years. It is now one of the principal industries.

CAST IRON, the crudest form of iron, obtained from the blast furnace by running melted metal into molds. The cast bars are from three to four feet long and from three to four inches wide. The molds are long, narrow channels. After the metal has solidified, the bars are taken out and placed in a storage room. Iron cast in this form is called pig.

CASTLE (kăs''l), a fortified building used as a residence and as a place of defense, usually belonging to a nobleman or a prince. Castles were especially numerous in feudal times.

Many ruins of these buildings are preserved in Europe, especially in Austria, England, France, and Germany. They were built chiefly of stone so as to make them proof against fire and the attacks of enemies. The entrance was defended by a *barbican,* which was often large and strong, and the *portcullis* or *iron grating* was hung by chains and weights. The larger castles had many rooms and compartments, the stronger of which was known as the *donjon* or *dungeon.* It was the last resort in case of great danger.

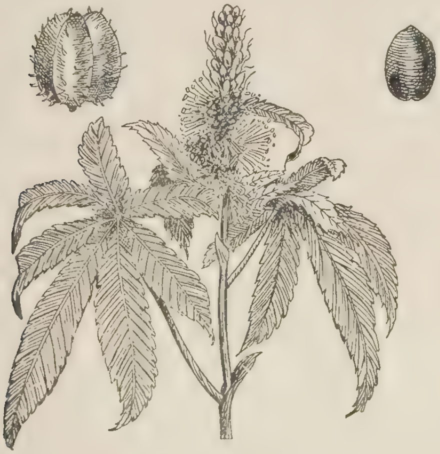
CASTLE GARDEN, the name originally given to a fort built on an island off New York. New York harbor was fortified after the War of 1812, which rendered Fort Clinton, the name applied to it, unnecessary. In 1822 it was deeded to the State and later leased and made into a pleasure garden. P. T. Barnum had control of it during the first appearance of Jenny Lind in America. It was used by the State board of immigration as an immigrant station until 1891. At that time the Government took charge of immigrants and transferred the station to Ellis Island, since which time Castle Garden has been transformed into an aquarium.

CASTLEREAGH (kȧs-'l-rā'), **Robert Stewart,** second marquis of Londonderry, born in Down County, Ireland, June 18, 1769; died Aug. 12, 1822. He was educated at Cambridge and in 1789 was elected to the Irish House of Commons, where he advocated the union of Ireland and England. In 1794 he became a member of the British House of Commons, was reëlected two years later, and in 1805 was made secretary of state of the department of war for the colonies. He resigned the following year, but was again made minister of war in 1807. His opposition to George Canning caused a duel between the two statesmen in 1809, when both resigned from office. Soon after he was returned to the ministry, and in 1812, when England was at war with France, he was a potent factor in promoting the coalition against Napoleon. He took part in the

Congress of Vienna, supported George IV. in his schemes of getting rid of Queen Caroline, and attended the congresses of Paris and Aix la Chapelle. In 1822, when about to join the Congress of Verona, he became despondent and committed suicide.

CASTOR AND POLLUX (kăs'tŏr ănd pŏl'lŭks), the chief stars of the constellation known as Gemini, the Twins. The former is of the first magnitude and the latter of the second. Longitude is reckoned from the latter, as outlined in the *Nautical Almanac,* a publication issued by the Government. In the mythology of Greece the two were noted as the twin deities, sons of Zeus. Immortality was assigned to Pollux, but Castor was regarded as mortal, while both were famous as the patron deities of the mariner. They accompanied Jason on the Argonautic expedition. When a storm had arisen on the voyage, Orpheus played on his wonderful lyre and prayed to the gods that the tempest might be stilled, when starlike flames shone over the heads of the twin brothers. When Castor was slain, Pollux could not be reconciled until Jupiter gave him immortality with his brother. In order to fill the mission assigned to both, they passed alternately one day under the earth and the next on the Elysian Fields. The soldiers of antiquity not only believed them guardians of navigation, but thought they were mounted on snow-white steeds, clad in rare armor, and that they took part in many battles of the Greeks and Romans.

CASTOR OIL PLANT, a plant native to the East Indies, but now generally distributed throughout the tropical and temperate zones. Its seeds are of light ash color, oval in shape, and about the size of a small bean. The castor oil sold in the markets is obtained from the seed of this plant by crushing and pressing. It is used largely in medicine as a purgative, and is a remedy for dysentery and irritation of the stomach. Castor oil is valuable as a lubricating oil in the higher classes of machinery. Most of the castor oil consumed in America is imported. The plant is grown extensively in gardens and parks for ornamental purposes.

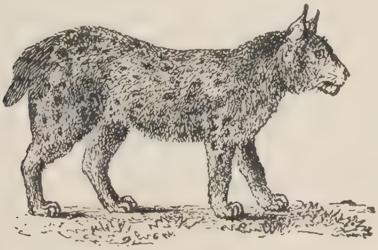


CASTOR OIL PLANT.

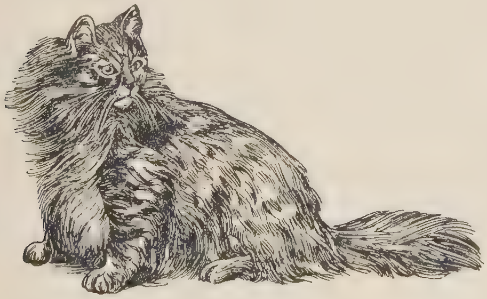
CASTRO (kä'strô), **Cipriano,** statesman, born near San Antonio, Venezuela, Oct. 24, 1860. He studied law and at an early age became interested in politics. During the administration of President Palacio he was a senator, but retired from that office in 1892. Subsequently he became the leader of an insurrection and was made provisional president in 1899. He was regularly elected for the term of six years in 1904, when a new constitution was adopted, under which the president cannot succeed himself. His administration was vigorous and progressive, especially in the promotion of a domestic and foreign policy of trade. In 1904 he seized the properties of the asphalt trust on the ground that these interests were responsible for an insurrection. The controversy was submitted to a court for investigation and the company was fined $5,000,000 for its alleged complicity in the disturbances. In 1908 the country became involved in difficulties with Holland, which blockaded a number of the ports and seized some of the vessels of war. His administration as a whole was directed toward the development of interior trade and domestic industries, rather than toward an encouragement of foreign interests and commercial relations. He died Dec. 5, 1924.

CAT, the name applied to a genus of quadrupeds, including the domestic cat, the wild cat, and other animals, such as the jaguar, puma, tiger, leopard, and cougar. The domestic cat is well known and has been a favorite animal for many years. It is thought that the cat was kept as a domestic animal in ancient Egypt, and that the country adjacent to the Nile is its nativity. The wild cat has been found more or less distributed in Eurasia, but is not thought to be the origin of the domestic kind, for the reason that the latter has no tendency to return to the type of a wild cat, even after being isolated from settlements for some time. Besides, there are no evidences that the wild kind has ever been domesticated, and cats now found in a wild state still retain the identical features of those met with many centuries ago. In 938 the cat became a general favorite in Europe,, and, on account of its rarity, laws were passed in several countries punishing those who stole or killed the animal.

The habits of the cat are quite well known and need very little description. Its ability as a hunter, both during the day and night, renders it valuable, while its characteristic mewing, purring, and cruelty in fighting are well understood. It is quite certain that a cat forms no real affection for mankind. Its attachment is rather to place and condition, where it may receive food and shelter. Its delight in tormenting a mouse before killing it has been mentioned as a trait of sympathy, but it is known that birds are generally inflicted with a fatal wound upon being captured, which is evidence that fear of escape causes the immediate death of the one, and the delight in torment of the other. The desire to return home is a peculiar characteristic, since it has the ability to find its way back at great distances, even when carried in an inclosure, but this trait is more distinctly marked in the older of the family.


WILD CAT.

The food of cats consists largely of meat and small quadrupeds, but in the absence of these its subsists on starchy food and even vegetables. Its cunning disposition is often manifest by an inclination to lay traps for mice and birds. Several incidents are on record where cats shelled grains of corn from the cob and placed them a short distance from the entrance to the hiding places of mice, in order that they might decoy their prey when coming for the morsels of food. There are several accounts of cats scattering crumbs in the winter time to attract birds that they might fall upon them. The peculiar construction of their eyes enables them to see quite as well in the dusk of the evening as in the daytime, which renders them peculiarly fitted to entrap the prey at the time when small quadrupeds are in the habit of coming out of their places of hiding for food. Nature seems not to have intended them to enter the water, as the absence of oily substances in the hair causes them to shun wet and moist places.


ANGORA CAT.

The skins of cats are valuable for rugs and sleigh robes. Electrical machines have been rendered more serviceable by the use of rubbers made of cats' skins. In former times illy informed people were superstitious regarding the conduct of cats. In Egypt they were held in reverence, and were honored by devotion and the construction of temples. Many people still prophesy visitors when a cat washes its face, or a death in the family when a catcall is heard from the top of a house. The foolish notion that cats have nine lives has led to the death of many of these very useful and agreeable animals. Among the various kinds of cats kept for domestic purposes are the *tailless cat* of the Isle of Man, the *Angora cat* of Asia Minor, the *Persian,* and the *blue* or *Carthusian.* The *Chinese cat* has long, silky ears that hang downward, the *tortoise-shell* variety is quite elegant and delicate in form, and the *Maltese* is a bluish-gray and a general favorite for store and house use. The Arabians are among the greatest lovers of cats and keep them as pets. Cats are more or less widely distributed and are either kept as pets or as a protection against pests.

CATACOMBS (kăt'ȧ-kōmz), the underground cavities used for the burial of the dead. This peculiar mode of caring for dead bodies was practiced by people of great antiquity. While the existence of vast catacombs has long been known, they were apparently forgotten by the great mass of writers until Father Bosio spent thirty years in exploring them. A descriptive account of his investigations was first published in 1632. Attention was again attracted to them by the celebrated work of De'Rossi in 1864-67. Among the celebrated catacombs are those of Egypt, Syria, Persia, Asia Minor, Palermo, and Syracuse. Many catacombs are of wonderful extent and still in a good state of preservation. In many of them are frescoes and paintings still as fresh and beautiful as if recently touched by the brush of the artist. At Milo a hill is fairly honeycombed with vaulted labyrinths in which thousands of bodies are stored. In the catacombs of Peru, South America, many remarkable relics have been found dating long prior to the Christian era. In Paris are similar burying places, but these have been used mainly as charnal houses for criminals and victims of pestilence and insurrections.

The most important catacombs are located near Rome, especially in the vicinity of the Appian Way. These crypts are believed to have been the places of worship of the early Christians at the time when the new worship was forbidden and the followers of Christ were generally persecuted. The earliest of these belong to the year 111 A. D., and the newest date from the time immediately previous to the period when Constantine began his reign. In these subterranean burial places are about 6,000,000 tombs. They are constructed in the form of galleries five feet wide and eight feet high, from which branches lead in all directions. Galleries lie above galleries, forming several stories and constituting a perfect honeycomb of rooms and departments. A vast number of them contain slabs on which Christian inscriptions and symbols are found, among them such as an anchor, a palm branch, or a dove. It is quite certain that these tombs were constructed by the Christians, principally by those possessing riches, and that they remained for some time under the control of the church. Later they passed to the ownership of church communities, but with the beginning of Constantine's reign they ceased to be used for burying purposes. The Goths and Lombards ravished divers of these tombs in the 6th and 8th centuries, and later the popes removed the remains of many saints and martyrs to the churches for burial.

CATALANI (kä-tȧ-lä'nē), **Angelica,** eminent singer, born at Sinigaglia, Italy, in 1779; died in Paris, France, June 13, 1849. She was educated at Saint Lucien, near Rome, where she displayed wonderful aptness in vocal powers. In her sixteenth year she made her first public appearance at Venice, which was followed by thirty years of successful touring throughout Europe, in which she amassed vast sums of money. Her voice ranked as the most wonderful, and the sublimity and beauty of it often moved to tears. On retiring from the stage, she bought a villa near Florence, and gave instruction free to girls of talent on condition of taking the name of Catalani. She died of the cholera while at Paris.

CATALEPSY (kăt-ȧ-lĕp'sȳ), a disorder generally connected with hysteria, in which the person afflicted falls into a state of real or apparent unconsciousness. Those afflicted remain in a rigid, fixed state from several minutes to several hours or even days, and very suddenly recover consciousness as if aroused from a deep sleep. It mostly affects people who are hysterical, and as a rule is followed by no bad consequences. Cases have not been infrequent in which persons affected by this disease were buried alive.

CATALPA (kȧ-tăl'pa), a class of trees found in the southern part of the United States, where they are native. The genus includes four or five species. They have large leaves, beautiful trumpet-shaped flowers, and long pods with winged seeds. The wood is soft and light, and its durability makes it valuable for railroad sleepers, furniture, and construction purposes. Several species common to the West Indies attain a height of forty feet and yield timber known as the French oak, while the bark is a source of tannin. The Asiatic species are much smaller and quite unimportant.

CATAMARAN (kăt-ȧ-mȧ-răn'), the name given to a kind of vessel or boat made of three logs lashed together. The center log is much the largest and serves as a keel, while the others correspond to the sides of a boat. This class of boats is either rigged with a sail or propelled wholly by paddles. The length is from twenty to twenty-five feet. They are used by the Hindus of Madras, the Ceylon Islanders, and on the coast of South America. In the monsoons and stormy seasons the catamaran is much safer than a boat of ordinary construction.

CATANIA (kȧ-tä'nē-ȧ), a seaport city of Sicily, on the northeastern coast, near Mount Aetna, thirty miles northwest of Syracuse. It is the capital of the province of Catania. Being surrounded by a fertile plain, it is frequently mentioned as the granary of Sicily. In 1693 it was visited by earthquakes which occurred at the time of an eruption of the great volcano, but it has since endured successive damages of this kind, and is the finest and most prosperous city on the island. It has a safe and commodious harbor, an excellent cathedral, and numerous public buildings. Among the most noted are the Church of San Nicolo, the Benedictine Convent, the town hall, and the university founded in 1445. The manufactures include linen goods, articles of wood, clothing, wine, machinery, and silk. It has stone and macadam pavements, waterworks, gas and electric lighting, and steam and electric railway service. The public library contains 92,500 books. It has several fine schools, a museum, and attractive gardens and parks. The city was founded as early as the 8th century B. C. by the Greeks, and attained its highest prosperity in the 5th century B. C. It was desolated by Dionysius, but later became the seat of a Roman colony, which caused it to attain its former commercial importance. The Goths inflicted severe damage, but it again rose to become the principal city of the island under the Byzantine Empire. Population, 1922, 149,295.

CATAPLASM (kăt'ȧ-plăz'm), a preparation applied to diseased or painful parts for soothing or stimulating the skin. The most common preparations of this kind have linseed meal as a basis, or are made up of yeast or mustard, in which form they are applied as a poultice.

CATAPULT (kăt'ȧ-pŭlt), an ancient military engine invented by Dionysius, tyrant of Syracuse, in 399 B. C. It was used for throwing darts, arrows, or stones with great force. Its construction was of wood. The framework supported a bow, which was bent by a windlass and the cord was released by a spring, thus causing the missile to be propelled with considerable force.

CATARACT (kăt'ȧ-răkt). See **Waterfall.**

CATARACT, an affection of the eye, in which opaque matter more or less penetrates the crystalline lens, causing vision to be either wholly or partially obstructed. A loss of the natural color of the pupil marks its earliest approach, and, when developed, the pupil has a milk-white color. There are two kinds of cataracts, the hard and the soft. Elderly people are affected most commonly with the hard cataract, while the soft cataract occurs at any age, but is most frequent among children. Children born with this condition, which often occurs, are said to be affected by *congenital cataract*. The form that results from a wound of the lens is called *traumatic*. The disease is quite painless and is treated by surgical operations, in which the diseased lens is removed from its location opposite the transparent cornea.

CATARRH (kȧ-tär′), a discharge or running which occurs under certain circumstances from the various outlets of the body. It is due to a number of causes, such as overheating, sudden checking of perspiration, constipation, or breathing foul air. In the eyes and nose it is usually called a cold in the head, in the back of the mouth and throat it is known as postnasal catarrh, and in the windpipe and bronchial tubes it is designated laryngeal and bronchial catarrh. The form of catarrh that affects the stomach and alimentary canal is known as gastric and intestinal catarrh, while that affecting the bladder is called vesical catarrh.

CATAWBA (kȧ-tạ′bȧ), a river of North Carolina, rises in McDowell County and courses 250 miles, entering South Carolina, after which it is known as the Wateree River. The name has been given to a wine made from the Catawba grapes, discovered near the river in 1801. It is now produced in large quantities in Ohio and other states, and is one of the wines most largely consumed.

CATAWBA, an Indian tribe formerly occupying large parts of North and South Carolina. The Catawbas were generally friendly to the settlers, and served with them in the Revolution and against the hostile tribes of Indians. Pontiac and Peter Harris, the latter a Revolutionary soldier, were of Catawba descent. When in their greatest strength, the tribe numbered 1,500 warriors. It is now reduced to a small number and most of these Indians are mixed with whites.

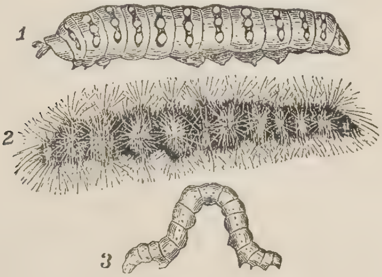
CATBIRD (kăt′bẽrd), an American bird belonging to the same group as the mocking bird, and commonly found in thickets and shrubberies. Its name was derived from the peculiar mewlike cry which it makes when disturbed. The nest is built of twigs, leaves, weeds, and grass, and its greenish-blue eggs usually number from four to six. Its food consists chiefly of worms, insects, berries, and fruit. The color is dark-gray or blackish, with bluish-gray beneath, and the head and tail brownish-black. It is more slender than the robin and measures about nine inches in length. In the autumn it passes to the extreme south of the United States, Mexico, and Central America, and in the spring moves northward, where it builds its nest and rears its young.

CATECHISM (kăt′ē-kĭz′m), an elementary book in which the principles of any art or science are explained by means of questions and answers, but the term is applied especially to texts treating of the principles of religion. The first Christian catechisms were those written by Kero of Saint Gall and Otfried of Weissenburg, and others issued in the 8th or 9th centuries. In 1520 Martin Luther published a short catechism for Protestant students, and larger and smaller ones were issued by him in 1529. These still continue to be used in the Lutheran churches. In 1536 the Geneva Catechism was issued, and in 1549 the catechism of the Church of England appeared. The latter originally contained only the baptismal vow, the ten commandments, the creed, and the Lord's Prayer with explanations. Later larger editions were published, the complete form appearing in 1612. The catechism of the orthodox Greek Church was published in 1542, and that of the Roman Catholic was issued in 1566 under the direction of the Council of Trent. The general assembly of divines at Westminster agreed upon the catechism of the Church of Scotland in 1648. Catechisms have since been published by other sects, some of which are of great literary merit. They constitute the principal text-books in teaching religious principles in parochial schools and academies.

CATEGORY (kăt′ē-gō-rȳ), in logic, a predicament understood to be an attempt at a comprehensive classification of all that exists, for the purpose of logical affirmation, proof, or disproof. The entire universe may be classified in various ways—as into things celestial and terrestrial; as matter and spirit, as minerals, plants, animals, etc. The original classification made by Aristotle proceeds on the very general properties or attributes that most extensively pervade all existing things, although in unequal degrees. He made ten categories, viz., *substance, quantity, quality, relation, action, passion, time, place, situation,* and *habit*. These have not been admitted by many logicians. Plato admits only five, the Stoics four, and Descartes suggests seven, while J. S. Mill says, "It is like a division of animals into man, quadrupeds, horses, asses, and ponies." He gives as the result of his own analysis the following enumeration: 1. Feelings, or states of consciousness. 2. Minds, which experience those feelings. 3. Bodies, or external objects. 4. Successions and coexistences, the likenesses and unlikenesses between feelings and states of consciousness.

CATENARY CURVE (kăt′ē-nȧ-rȳ), a curve formed by a chain or rope of uniform density hanging freely from any two points. The forms are of two kinds, the *common* and the *uncommon*. The former is constituted by a chain equally thick in all its points; the latter, by a thread unequally thick. The catenary curve was first observed by Galileo, who proposed it as the proper figure for an arch of equilibrium. It is now adopted in suspension bridges, and is of interest as bearing on the theory of arches and domes.

CATERPILLAR (kăt′ẽr-pĭl-lẽr), the larva or larval state of lepidopterous insects, from which they finally turn into butterflies, moths, or hawk moths. They are hatched by the warmth of the sun from the eggs laid by the butterfly. The points of difference in caterpillars are as great as those found in the perfect insects into which they change. The body, usually soft and formed like a cylinder, is generally divided by rings into thirteen segments, with nine small openings for respiration on each side of the head. Most caterpillars have a rounded head composed of a horny substance. It is much harder than the rest of the body and contains about six shining points at each side, which are regarded as eyes, and two very short antennae. In size they vary from very small to quite large, the usual size being about an inch in length. The body of some is covered with hairs, and others have a smooth skin. Many live in large societies in nets spun in the small branches of trees, while others roll leaves for houses or burrow in the ground. The food consists of seeds, roots, fruits, flowers, or leaves, this depending upon the class to which they belong. Most catepillars that grow into butterflies have sixteen legs, and those that develop into moths have from ten to sixteen. In many caterpillars the legs are distributed along the entire body, while in loopers, spanners, or measuring worms they are on the ends of the body. The latter class move from place to place by drawing themselves into arches or loops.

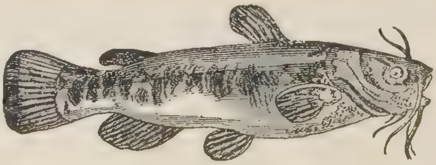


CATERPILLAR—1 SMOOTH, 2 HAIRY, 3 SPANNER.

When hatched from the egg, the caterpillar grows very fast, owing largely to its remarkable ability to devour food, which sometimes equals more than twice the weight of the body in a day. For this reason the insect becomes very harmful to tender plants, shrubs, and trees. It turns into the pupa or chrysalis state before becoming a butterfly or moth. In this state it is pointed and has little warts over its surface, but some species have a smooth and oval surface. When about ready to turn into the chrysalis state, it ceases to eat and hangs from the under side of a twig or leaf by means of its legs or threads of silk spun by itself. While in this state it is at perfect rest and takes no food. After eight or ten days it passes into the butterfly or moth state, but during damp and cool weather it requires from two to three weeks to make this change. Shortly after passing from the chrysalis state it is seen with its wings hanging downward, but they soon grow to their proper proportion, the body becomes hardened, and the butterfly is seen flitting about gathering food from various articles of subsistence.

The habits of caterpillars are quite various, some moving about during the daytime, while others work at night taking in their food. It is estimated that the food consumed by a caterpillar before passing into the developed state weighs many thousand times as much as the first weight of the larva. Among the enemies of the caterpillars are birds and poultry. In some localities birds are valuable in destroying caterpillars and protecting orchards from their ravages. Butterflies and moths are not as great a pest as caterpillars for the reason that they move from place to place, while caterpillars remain fixed to one place, thus entirely consuming the foliage and vegetation as they move onward. From 200 to 800 eggs are laid by a single butterfly or moth, and when these come into the caterpillar state they fully cover large branches of trees, sap them of their juices, and often cause them to wither and die. Some forms of caterpillars are carnivorous, and live on the carrion of insects and small quadrupeds.

CATFISH (kăt′fĭsh), a fish found in the lakes and streams of all the continents. The family includes a large number of species. In the catfish of North America the skin is wholly naked, most species have barbels about the mouth, and the color is dark or dark-blue. All have a large head and are armed with barbs or spines, with which they are able to inflict a painful wound. Among the familiar species are the *channel cat*, the *bullhead*, and the *stone cat*. Those found in the smaller streams are usually from six to ten inches long, while a number of species common to lakes grow to a length of several feet. The catfish of the Mississippi attains a weight of over one hundred pounds. It prefers to frequent muddy bottoms rather than clear streams. The flesh is prized for its flavor and nutritious qualities.

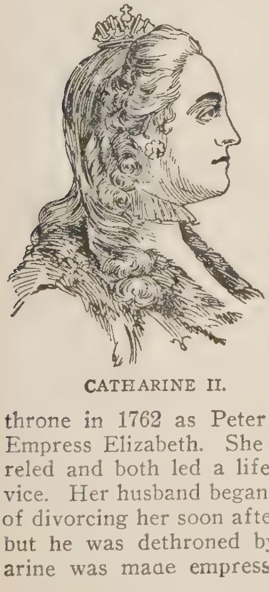


CATFISH.

CATGUT (kăt′gŭt), a cord used as the strings in musical instruments, such as the violin, harp and guitar. It is employed as whipcord, in the bows of archers, and in the cords used by clockmakers. Catgut is made chiefly from the intestines of the sheep, and sometimes from those of the mule and horse, but not from the intestines of a cat. It is prepared by a tedious process, which consist chiefly of cleansing the intestines from fatty matters, after which they are steeped in water and carefully scraped with a blunt knife, then treated with a solution of alkali, and assorted into their respective sizes by drawing them through a perforated brass thimble. At this stage the catgut is subjected to the fumes of burning sulphur in order to prevent offensive odors or putrifaction. The so-called Roman strings, manufactured in Italy, are considered the strongest and best on the market. Surgeons use a superior grade of catgut for tying wounds, and whipcord is made by twisting catgut similar to a one-corded rope.

CATHARINE I. (kăth'ĕr-ĭn), Empress of Russia, born in 1684; died May 17, 1727. She was the posthumous daughter of John Rabe, a Swedish quartermaster of Livonia. Her mother died when she was but three years old, and she was brought up by a Lutheran minister named Glück. She married a Swedish dragoon in 1701, who fell in the service, and later the attention of Peter the Great was attracted to her. In 1703 she joined the Greek Church and assumed the name of Catharina Alexiawna. In 1711 she became the wife of Peter the Great, whom she bore eight children, all but two daughters, Anne and Elizabeth, dying in youth. After the death of Peter the Great, on Jan. 28, 1725, she became empress of all the Russians.

CATHARINE II., Empress of Russia, born at Stettin, Germany, April 25, 1729; died Nov. 9, 1796. She was the daughter of Christian August, the Prince of Anhalt - Zerbst and field marshal of Prussia. Her name was changed from Sophia Augusta to Catharine Alexiewna when Empress Elizabeth of Russia selected her as the wife of her nephew, Peter, the intended successor to the throne. She also went over from the Lutheran to the Greek Church. Her husband ascended the throne in 1762 as Peter III., the successor of Empress Elizabeth. She and her husband quarreled and both led a life of open, unrestrained vice. Her husband began to entertain the design of divorcing her soon after ascending the throne, but he was dethroned by a conspiracy. Catharine was made empress and Peter was murdered in prison. When Poland was partitioned, she added dismembered portions to Russia in 1772, 1793, and 1795.


CATHARINE II.

In the war of six years against Turkey, from 1768 until 1774, she acquired the Crimea, by which the Black Sea became open to the Russian navy. Her ambition was to drive the Turks entirely from Europe and restore the historic Byzantine Empire, but in this she did not succeed. Her armies were sent to Persia, whence she expected to proceed to India and overthrow the British government, but she was suddenly stricken by apoplexy, which caused her death. Her reign was marked by many valuable reforms, including the betterment of the condition of the serfs, a more efficient administration of justice, the construction of vast canals, the founding of public schools and academies, and other movements that tended toward prosperity and enlightenment. For the purpose of aiding in the development of Russian thought and literature, she retained some of the most noted philosophers and writers of Europe. Though progressive in external affairs, her private life was not above suspicion. Judged from the standpoint of political achievements, she ranks among the most successful female sovereigns.

CATHARINE DE MEDICI (dȧ-mȧ'dē-chē), Queen of Henry II. of France, born at Florence, Italy, in 1519; died at Blois, France, Jan. 5, 1589. She was the daughter of Lorenzo de Medici and in her fourteenth year was brought to France, where she married Henry, second son of Francis I. The marriage was partly owing to the influence of her uncle, Pope Clement VII., who soon afterward died, and she was for a time neglected and friendless in Paris. Her spirit of submission won the favor of the king, and, with the ascent of her eldest son, Francis II., to the throne, in 1559, her power began to display itself. She was opposed by the Guises and entered into a secret alliance with the Huguenots to oppose them. Francis II. died in 1560 and was succeeded by her second son, Charles IX., when the government fell into her hands as regent. It is certain that she cared little for religion, but opposed the Protestants because their principles were opposed to her spirit of absolute despotism.

With the design of removing the Guises, Catharine made a league with the Huguenots, but this resulted in a civil war which terminated favorably to the Protestants. Her next plan was to conclude a treaty with Spain to extirpate heretics, and she plotted with the Guises with the intention of murdering the Protestant leaders. This scheme resulted in the fearful massacre of Saint Bartholomew's Day (q. v.), which she sought to excuse to Protestants, but boasted of her power and influence regarding it to the Roman Catholic governments. Her third son, Henry III., was elected to the Polish throne by the use of money and intrigues. The Roman Catholic party was distrustful of her, and her son, the Duke of Alençon, became allied with the Protestants to curtail her power. She lost the confidence of both parties and died without heed or lament. Her policy was noted for extravagance and luxury, and nothing was too sacred to sacrifice for her ambition.

CATHARINE HOWARD, Queen of England, the fifth wife of Henry VIII. She was born about 1521 and married the king in 1540. Her conduct of impropriety caused her to be executed in 1542.

CATHARINE OF ARAGON, Queen of England, first wife of Henry VIII., born in December, 1485; died in January, 1536. She married Arthur, Prince of Wales, son of Henry VII., in 1501. Her husband died about five months after the marriage and the king, unwilling to return her dowry, brought about her marriage with his second son, Henry, then a boy of only twelve years. To enable such a marriage between near relatives it was necessary to receive a dispensation from the Pope, which was granted in 1503, and the marriage took place in 1509. Shortly after Henry was crowned king as Henry VIII. She was the mother of several children, all of whom died in infancy except Mary. The king conceived a passion for Anne Boleyn in 1527 and attempted to declare his first marriage void, but after much complication married Anne Boleyn without a divorce from his first wife. However, the first marriage was afterward declared void. Queen Catharine did not leave England, but resided at Kimbolton Castle, where she led a devoted religious life.

CATHARINE PARR, Queen of England, the sixth wife of Henry VIII., born in 1513; died in 1548. She married Henry VIII. on July 12, 1543, having had two previous husbands, Lord Burgh and Lord Latimer. Her learning and knowledge of religious subjects made her distinguished, and her discussion of them with the king almost brought her to the block. She became interested in the welfare of universities and succeeded in causing the king to restore the right of succession to his daughters. After the death of the king, she married Sir Thomas Seymour, in 1547, and died the following year.

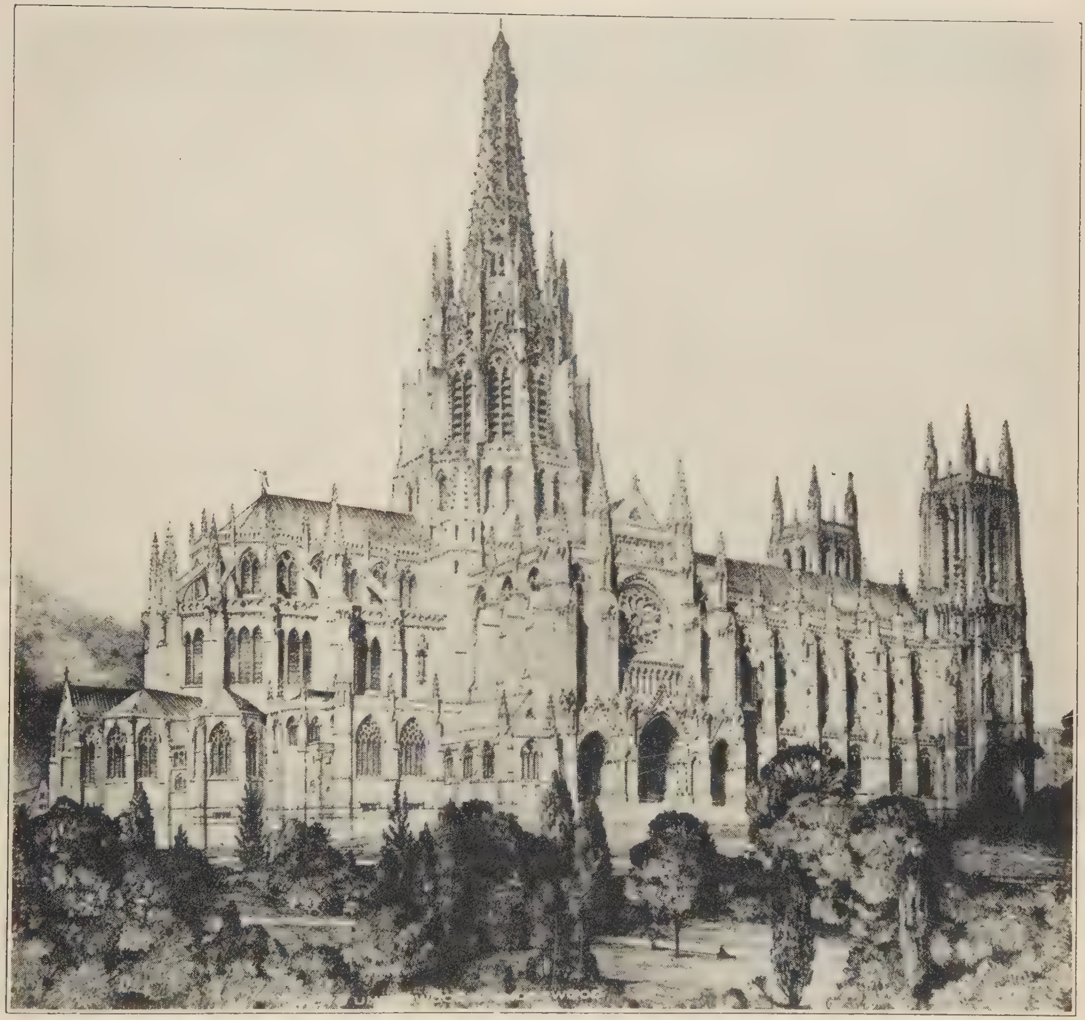
CATHEDRAL (kȧ-thē'dral), the principal church of a province or diocese. It is distinguished from others by its *cathedra* or throne, and by having a more elaborate and larger style of architecture. The largest and most noted cathedral is Saint Peter's at Rome, founded in 1450. Others of much renown include the fine Italian-Gothic style at Florence, begun in 1294; the one at Milan, 1386; at Cologne, 1248; those at Amiens and Rheims; and the Notre Dame Cathedral, Paris; the last mentioned was begun in 1163. Many of the noted cathedrals of Europe are in the Gothic style, and in connection with them are side chapels, chapter houses, crypts, and cloisters. The Byzantine, Romanesque, and Renaissance styles of architecture are well represented in the cathedrals of continental Europe. Among the leading cathedrals of North America are the Notre Dame, in Montreal; the Roman Catholic Cathedral of Saint Patrick's, in New York City, and the Protestant Episcopal Cathedral of Saint John the Divine, in New York City.

CATHERWOOD, Mary Hartwell, novelist, born in Luray, Ohio, Dec. 16, 1847; died Dec. 26, 1902. She attended the public schools and the Female College at Granville, Ohio, and in 1869 settled at Newburg-on-the-Hudson, to devote her time in writing for magazines. While there she completed a number of novels, and in 1881 married James S. Catherwood and removed to Hoopeston, Ill. A number of her writings are historical romances illustrating life in some of the states and in French Canada They include "The Romance of Dollard," "The Chase of Saint Castin, and Other Stories of the French in the New World," The Spirit of an Illinois Town," "Mackinac and Lake Stories," and "The Queen of the Swamp, and Other Plain Americans." She was an editorial writer on the Chicago *Graphic* for some time.

CATHETOMETER (kăth-ē-tŏm'ē-tẽr), an instrument employed to measure accurately small differences of height, especially two columns of fluid. It consists of a perpendicular metallic standard, to which is attached a telescopic leveling apparatus so it may be moved up or down. In order to sight the objects or surfaces, the telescope is raised or lowered, and the differences in height are thus seen on the graduated standard.

CATHODE RAY (kăth'ōd), a kind of ray generated at the cathode in a vacuum tube by the electrical discharge. The poles of the battery are called *electrodes.* The one which receives the electric current, or the negative pole, is called *cathode,* and the other, which overflows with electricity, or the positive pole, is known as the *anode.* When a cylindrical tube from which the air has been exhausted is attached to the poles of an electrical machine, the cathode rays fill the vacuum with a green light. An apparatus of this kind is employed in producing Röentgen rays.

CATHOLIC CHURCH (kăth'ō-lĭk), a term signifying universal church. It cannot be applied to any particular sect or party, as Greek, Anglican, Roman, Lutheran, or Presbyterian, since any one of these forms merely a portion of the universal church. The term is employed to distinguish the Christian from the Jewish; the former applies to the world and the latter is confined to a particular nation. About the year 160 A. D. the term *Catholic Church* began to be applied in this universal sense to distinguish the followers of Christ from Gnostics and all others not holding to Christianity. The term is now applied in the catechisms, the books of faith, of the Christian churches generally, but the Roman Catholic and Greek Catholic are the only ones that have retained the name and made it apply



CATHEDRAL OF SAINT JOHN THE DIVINE

This cathedral, located in New York City, not far from Columbia University, has been building the past 32 years, and, up to the end of 1926, $7,500,000 had been expended in its construction. Estimates place its total cost when completed at $21,500,000. In size it will be exceeded only by St. Peter's at Rome and the Moorish Mosque at Seville, Spain. The Holland Chapel, named for St. Boniface and representing the German rites, was completed in 1916 and is in constant use. It will probably require 25 years more to complete the entire structure.

to their organizations. See **Greek Catholic, Roman Catholic.**

CATHOLIC EMANCIPATION, in England, the term used in reference to the repeal of certain laws affecting the civil rights of Roman Catholics. The law prohibited Catholics from purchasing land and performing the rites of their church until 1780, when many of these laws were repealed. The Duke of Wellington, in 1829, moved the repeal of all anti-Catholic laws, and after much discussion they were generally discontinued. However, there are still some restrictions upon Catholics, chief among which is that a seat in the House of Commons cannot be held by a Catholic priest.

CATHOLIC UNIVERSITY OF AMERICA, an institution of higher learning established at Washington, D. C., under authority of Leo XIII., who granted its apostolic constitution in 1887. It was opened for instruction in 1889. The chief officers, who consist of the chancellor, the rector, and the treasurer, are chosen by the board of trustees, which is made up from the laity, clergy, and episcopate. Cardinal Gibbons, the first chancellor, held that office many years. The primary purpose is to facilitate original research by graduates of Catholic seminaries and colleges. It maintains faculties of law, philosophy, theology, and technology, and instruction is given by about 115 professors. The library has 360,000 volumes and the value of the institutional property is $15,000,000. The attendance is reported at 2,310.

CATHOLIC YOUNG MEN'S NATIONAL UNION, an organization of young men belonging to the Roman Catholic Church. It is a federation of the diocesan unions and was organized in 1875. A council approved it at a session held in Baltimore, and since then it has grown in favor and membership in the United States and Canada. The purpose is to bring young men into the church, establish and maintain reading rooms, and promote the organization of libraries. It has a membership of about 65,000.

CATILINE (kăt'ĭ-līn), **Lucius Sergius,** Roman statesman and conspirator, born in the year 108; slain in 62 B. C. He was of patrician rank and attached himself to the party of Sulla. His physical constitution was powerful, fitting him for the endurance of much labor and fatigue, while his mind was resolute and unyielding. He was elected praetor in 68 B. C., became governor of Africa in 67, and desired an election to the consulship in 66, but charges of misrule in his province disqualified him. Being disappointed in his ambition and greatly burdened with debts, he organized a conspiracy with several young Roman nobles who were in similar circumstances. The first design of the conspiracy was upon the life of Cicero, the great orator, but it was revealed to him by Fulvia, a mistress of one of the conspirators. On Nov. 6, 63 B. C., Catiline assembled his confederates and detailed a second conspiracy which included the assassination of Cicero, the movement of the Tuscan army, killing the hostile senators and citizens, and then setting fire to Rome. This plan also became known to Cicero, and, when Catiline took his seat in the senate on Nov. 5, he rose in that body and delivered his famous address against Catiline. Cicero's keen attack and minute detailment of every plan germane to the conspiracy abashed the conspirator, and, when he attempted to reply, his voice was lost in the cries of execration. He left the senate with curses on his lips and fled from Rome in the night. The senate promptly denounced him as a traitor and an army was sent out for his arrest. He encountered the army under Antonius in Etruria, where he was defeated and slain after displaying almost superhuman enthusiasm and courage.

CAT ISLAND, one of the Bahama Islands, about 200 miles northeast of Nuevitas in Cuba. It is about 45 miles long, from two to eight miles wide, and is largely of coral formation. It is supposed that Columbus visited this island in 1492.

CATLETTSBURG (kăt'lĕts-bûrg), a city in Kentucky, county seat of Boyd County, at the confluence of the Big Sandy and Ohio rivers, on the Chesapeake and Ohio Railroad. It has electric lights, waterworks, and a brisk trade in lumber and merchandise. The manufactures include flour, machinery, and lumber products. Among the chief buildings are a county courthouse and several fine churches and schools. Population, 1900, 3,081; in 1920, 4,183.

CATLIN (kăt'lĭn), **George,** writer and traveler, born in Wilkesbarre, Pa., in 1796; died Dec. 23, 1872. He studied law and began to practice, but soon after took up the work of a portrait painter. In 1832 he began a series of travels among the Indians of North and South America, which enabled him to secure many valuable portraits and gather material for numerous books, which he illustrated. His paintings were exhibited in many places of America and Europe, but they are now in the National Museum of the United States, where they may be seen in the Catlin Gallery. His chief writings are "Eight Years' Travel in Europe," "Last Rambles Among the Indians," and "Manners, Customs, and Conditions of the North American Indian."

CATNIP (kăt'nĭp), or **Catmint,** a perennial plant of the mint family, common in the fields of Europe and North America. It was so named for the fondness with which cats eat the leaves. The plant has an erect stem from two to three feet in height and heart-shaped leaves, and bears a dense whorl of whitish flowers. The leaves are soft and downy beneath. They are aromatic and somewhat bitter to the taste and have a slightly disagreeable odor. The leaves are used in medicine as a tonic.

CATO (kā'tō), **Marcius Porcius,** celebrated

Roman, born at Tuscalum in 234 B. C.; died in Rome in 149 B. C. His proper name was Marcius Porcius, but he was surnamed Cato, signifying "the wise," and often called Cato Major to distinguish him from Cato of Utica. His father was a plebeian from whom he inherited a small farm in the region of the Sabines, where he learned to love the severe and simple manners of his Roman ancestors. He removed to Rome at the solicitation of Lucius Valerius Flaccus, and soon protested against the luxury that had begun to abound in the capital by reason of the introduction of Grecian manners. He became a distinguished pleader at the bar of justice and was elected consul. When Scipio the Elder was in Spain, Cato won several successes and exhibited extraordinary military genius, for which he was greatly honored. He was elected censor in 184 B. C. and discharged the duties of that office so vigorously that the term *Censorius* was applied permanently to him. In that capacity he promoted many internal improvements, such as repairing water courses, cleaning drains, and constructing pavements and reservoirs, besides actively engaging in the general reformation of public morals and education. He was sent to Carthage in 175 B. C. to make a treaty between the Numidians and Carthaginians. After returning to Rome, he described Carthage as the greatest rival of the empire, and advocated the destruction of that city. This design, first advocated by Cato, became the war cry of the Romans. He was twice married, his second wife being the mother of a son, the grandfather of Cato of Utica. Besides being an influential orator and military commander, Cato ranked as a writer. Cicero, the greatest Roman orator, read 150 of Cato's orations.

CATO, Marcius Porcius, Roman statesman, born in 95 B. C.; slain by himself in the year 46 B. C. To distinguish him from a celebrated Roman of the same name, he was called Cato of Utica. He lost his parents at an early age and was educated by M. Livius Drusus, an uncle, and gave early proof of strength of character and decision. He served with distinction in the campaigns against Spartacus in the year 72, but found no satisfaction in military life. Subsequently he studied at Rome all the intricate phases of the financial question, and qualified himself for the quaestorship. Soon after his election he introduced reforms in the treasury offices, though he met with violent opposition. He was elected tribune in 63 B. C., and afterward delivered his famous speech against Catiline and Caesar, charging the latter as an accomplice. When the triumvirate between Caesar, Crassus, and Pompey was formed, he led a strong opposition against it and was at first successful. Later his opposition to Caesar failed and served to strengthen the triumvirs. When Pompey became a rival of Caesar, he sided with the former, and after the Battle of Pharsalia in 48 B. C., in which Pompey was defeated, he escaped to Africa. The partisans of Pompey in Africa elected him commander, but he resigned in favor of Metellus Scipio and commenced the defense of Utica. When Scipio was defeated by Caesar at Thespius, April 6, 46 B. C., he advised the Roman senators and knights to flee from Utica and to make peace with Caesar. He spent the night after Scipio's defeat in reading Plato's "Phaedo," and ended his life by stabbing himself in the breast.

CATS (käts), **Jakob,** poet, born in Brouwershaven, Holland, Nov. 10, 1577; died Sept. 12, 1660. He was educated at Leyden and later received a degree from the university at Orleans, France, and took up the practice of law at The Hague, where he won a reputation as a lawyer. Ill health caused him to give up his profession. He was grand pensionary of Holland from 1636 until 1652, and was twice sent to England as an ambassador. In 1645 he was made keeper of the great seal of Holland, but retired from public service in 1651 to devote himself to literature. His chief writings include "Emblems of Fancy and Love," "Manly Respectability," "Age and Country Life," "Mirror of the Old and New Time," "Inward Strife," and "The Life of Eighty-two."

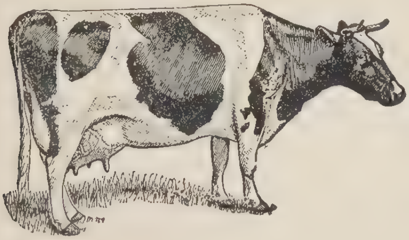
CAT'S-EYE, a mineral classed with the precious stones, found in Brazil and Ceylon. It is so named from its peculiar internal radiation called *chatoyant,* which somewhat resembles a cat's eye. It is commonly of a greenish-gray color, though sometimes red, brown, or yellow. A variety known as *tiger-eye* is obtained in the vicinity of the Orange River in South Africa. It is an altered crocidolite and is not of much value.

CATSKILL (käts'kĭl), county seat of Greene County, New York, on the Hudson River, thirty-five miles below Albany. It occupies a fine site at the mouth of Catskill Creek, on the West Shore Railroad, and is the starting point of the Catskill Mountain Railroad. The chief buildings are a courthouse, an academy, a public library, and an opera house. Among the manufactures are brick, woolen goods, and stone products. It is an important station for pleasure parties visiting the Catskill Mountains and is connected by ferry with the New York Central Railway on the east side of the river. The vicinity was settled by the Dutch in 1680. Population, 1900, 5,484; in 1920, 4,728.

CATSKILL MOUNTAINS, a group of mountains in New York, belonging to the Appalachian system, situated west of the Hudson River and south of the Mohawk. Washington Irving made the Dunderberg, one of the Catskills, the scene of his famous "Rip Van Winkle." The area covered by the group is about 5,000 square miles. The highest peaks are Roundtop, 3,810 feet; Slide Mountain, 4,250; and Hunter Mountain, 4,025. The scenery is very fine and attracts many visitors in the summer season. Forests of oak ash, beech, pine, and maple cover a large part of the region.

CATTEGAT (kăt′tĕ-găt), or **Kattegat,** a gulf extending between Sweden and Denmark. It is an extension of the Skager-Rak from the North Sea. Its length is 150 miles and the greatest breadth is 90 miles. The shores of Sweden are rocky and steep, but the Danish shores are low. There are sand banks more or less dangerous to navigation. Among its principal islands are Samsö, Läsö, and Anholt.

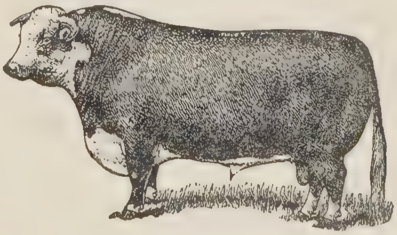
CATTLE (kăt′t'l), the name formerly applied to all large domestic animals, such as oxen, cows, horses, swine, and sheep, but now limited to cows, oxen, and steers. The name applied to this class of animals in British countries is neat cattle. Cattle were unknown in America prior to the discovery of the continent by Columbus. They are mentioned in the ancient records of Hindu and Hebrew peoples, and are shown extensively on Egyptian monuments constructed more than 2,000 years before the Christian era. Remains of cattle have been found in the Swiss lake dwellings along with stone implements. The wealth of primitive man consisted largely of cattle, since they furnished the necessary meat and milk for subsistence, answered as beasts of burden, and were suitable for plowing the soil and threshing the grain. The Hindus still hold several species sacred. The Romans punished the mistreatment of this animal by inflicting severe penalties, while the Germanic and Latin tribes of early Europe used them as a chief support.


HOLSTEIN COW.

Cattle were first brought to America by the Spaniards in 1525, about six years after the discovery of Mexico by Cortez. From Mexico they spread into California, Central America, and later over the whole of South America. Most Spanish grades of cattle are marked by rough characteristics and a tendency to merge into a wild state. The wild cattle of South America are descendants of those brought from Spain. The Dutch brought the first cattle to the northern colonies in 1625. Others introduced them into Virginia from the West Indian Islands, while the Swedes brought a number to Delaware in 1627; the Danes, to New Hampshire; and the English, to Maryland. Most of the teaming, plowing, and prairie breaking in early times was done by oxen, horses being introduced later on account of their greater speed.

The grades of cattle now generally reared in Canada and the United States are greatly diversified, owing to the fact that importations have been made from various parts of Europe, but also because different sections of the country demand a diversity. The chief uses of cattle are to supply milk and yield beef, although in many localities there is still a demand for oxen as beasts of burden. It may be said that the *Galloways* constitute a grade distinctly fitted for beef production, while the *Holstein, Jersey, Guernsey,* and *Ayrshire* breeds are reared principally for their abundant yield of rich milk. The *Durham, Hereford, Shorthorn,* and *Galloway* grades are reared extensively for beef, especially in the corn-producing sections of the country. Among the dual grades, that is, breeds yielding profitable returns both of beef and milk, are the *Milking Shorthorns* and the *Red Polled* cattle. In general Texas cattle are coarser and rougher, owning to their descent from Spanish ancestors, but they are being rapidly improved by skillful breeding and care. Other well-known breeds of cattle are the *Polled Aberdeen, Devon, Angus, Suffolk, Red Polls, Norfolk,* and the highly valuable Dutch breeds, among them the *Dutch Belted.*

Beef is obtained from the adult animal including both the male and female, and veal is secured from the calves. The hides of cattle are of value in making leather, while the bones are used for fertilizing; the blood, for buttons and fertilizing; and horns, for cutlery and other purposes. The production of milk, cheese, butter, and beef constitutes one of the most important industries in America, engaging much labor and capital. Several grades, among them the Galloways, are *hornless,* but feeders of cattle have for many years practiced *dehorning,* a process whereby the horns are removed by means of a saw, or the germs of the horns are clipped out of the head of the calf when it is a few days old. Dehorning has proven valuable in that it makes the cattle more docile, and consequently more productive in milk and beef. The State of Iowa has led in the production of milk and butter, while Texas ranks first in the number of beef cattle produced annually in the United States. The best grade of cattle reared in Canada are in the Province of Ontario. In the western grazing districts cattle are largely grass-fed, while in the corn belt region the richest corn beef is produced.


HEREFORD BULL.

CATULLUS (kȧ-tŭl′lŭs), **Gaius Valerius,** lyric poet, born near Verona, Italy, about 87 B. C.; died about 54 B. C. He took up his residence at Rome while a youth, and here enjoyed the friendship and society of Caesar and Cicero. Little is known of his personal life, and writers depend upon their knowledge of him by consulting his writings and the works of others. He became attached to a woman by the name of Lesbia, whom he celebrates in his lyric verses. It is thought that this woman was Clodia, the sister of P. Clodius Pulcher, an enemy of Cicero. In other writings he describes a journey to Bithynia, and gives an account of his yacht and the villa where he made his home. He was a master of poetic diction and ranks next to Lucretius in originality among the poets of Rome. His writings are admired for their beautiful style and intensity of feeling.

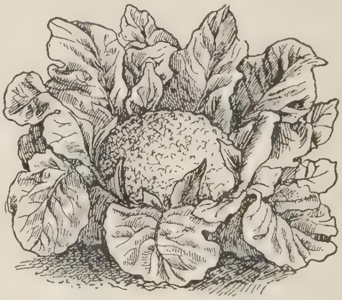
CAUCA (kou′kȧ), a river of Colombia, South America, the largest tributary of the Magdalena. It rises in the Andes and flows northward through Cauca, Antioquia, and Bolivar, and has a length of about seven hundred miles. The lower course is navigable, but numerous waterfalls obstruct navigation in the province of Cauca.

CAUCASIAN (ka̤-kā′shan), the name first applied by the German writer Johann F. Blumenbach (1752-1840) to the fair race, because of its greater intelligence and physical perfection, and because he regarded it the original race. It is classed into three branches: the Hamitic, the Semitic, and the Japhetic. The Hamitic races formerly inhabited the Arabian Peninsula, Palestine, and the valley of the Nile. The Semitic races include the inhabitants of Arabia, Abyssinia, the northern part of Africa, and the Jews. This race included the great peoples of antiquity—the Assyrians, Babylonians, Moabites, Edomites, Phoenicians, Ammonites, and Ishmaelites. The Japhetic races include the Aryan. They are classed as follows: The Germanic, including Germans, Dutch, English, Flemish, Danes, Swedes, and Norwegians; the Celts, comprising the Welsh, Irish, Scots, and Bretons of France; the ancient Greeks; the Romanic, including the French, Italian, Spaniards, and Portuguese; the Slavonic, comprising the Russians, Croats, Poles, and Czechs; the Iranians, including the Afghans, Persians, and Baluchis; the Hindus.

CAUCASUS (ka̤′kȧ-sŭs), a mountain range in the region between the Caspian and Black seas, stretching northwest and southeast, and forming part of the boundary between Asia and Europe. The width is about 150 miles and the length is 750 miles. A number of the peaks are highly elevated, including Kasbek, altitude 16,546 feet; Koshtantau, 17,120 feet; Dikhtau, 16,925 feet; and Elbruz, 18,570 feet. The region contains a number of mud volcanoes, mineral and thermal springs, and a few glaciers. At its eastern extremity, near the Caspian Sea, are the productive oil fields of Baku. The inhabitants include Russians, Tartars, Armenians, Turks, Persians, and Georgians. The Russian government has established a number of forts, built railroads, and constructed several military passages across the mountains. Among the leading products are cattle, cereals, minerals, and timber. Tiflis is the central railway city.

CAUCUS (ka̤′kŭs), a term derived before the American Revolution from meetings held by calkers of ships in so-called calkhouses of Boston, for the purpose of resisting the British and eventually controlling the city. The term *calk-hus* was applied in ridicule by British sympathizers. John Adams first used the word *caucus* in his diary in 1763. It is now applied to meetings held by political parties or legislative assemblies in which plans for future action are discussed. In some states caucuses are regulated by law to prevent designing persons from obtaining undue advantages, in which case the voting is by ballot and the meetings are called *primaries.* The caucus has recently been introduced into Great Britain.

CAULIFLOWER (ka̤′lĭ-flou-ẽr), a species of cabbage cultivated extensively by the Greeks and Romans. The flowers constitute a flattened head and are the edible part. It requires a richer soil and is not so hardy as cabbage, but is cultivated in a similar manner. It is pickled or is eaten boiled with sauce. Among the species cultivated are *broccoli,* which matures late, and *snowball* and *dwarf erfurt.* See **Cabbage.**



CAULIFLOWER.

CAUSTIC (ka̤s′tĭk), a substance that destroys the tissues of the animal parts to which it is applied. It is used to remove morbid growths, as warts, cancerous deposits, and excessive granulations, and to improve the character of ulcerated surfaces. Caustics serve a good purpose in opening abscesses and in destroying poisonous bites of rabid animals and serpents.

CAVALIER (kăv-ȧ-lēr′), a term used to designate a horseman. The courtiers, in the struggle between Charles I. and his Parliament in 1641, were nicknamed *Cavaliers,* and the friends of the Parliament were called *Roundheads.* Later the Cavaliers came to be called Tories and the Roundheads were known as Whigs.

CAVALRY (kăv′al-rȳ), the division of a military force which serves on horseback. In time of peace cavalrymen serve as a mounted police and form a nucleus for organization in case of war. Their drilling is thorough, fitting them to maneuver both on horseback and as foot soldiers. This part of the army is serviceable for speedy and decisive movements to protect the center or the wings of a department, and is utilized as closely to the infantry as possible. During the time of war, the cavalry is employed chiefly to cover a retreat, for intercepting an enemy, for procuring intelligence, and as an aid in foraging. Formerly the cavalry was armed with lances and sabers, but now the arms consist principally of rifles and revolvers. See **Army.**

CAVE DWELLERS, a prehistoric race that lived in caves and caverns. Very little is known of this peculiar race of people, and the only information obtainable is from the remains left in the places of their habitation. New Mexico, Arizona, Mexico, and Utah have supplied the best evidences of cave dwellers. Their remains indicate that they knew nothing of agriculture, metals, and pottery, and that they kept none of the domestic animals. Their manufactures and modes of life were very simple and primitive. See **Cliff Dwellers.**

CAVENDISH (kăv′en-dĭsh), **Frederick Charles, Lord,** son of the seventh Duke of Devonshire, born in England, Nov. 30, 1836; murdered in Phoenix Park, May 6, 1882. He was educated at Trinity College, Cambridge. In 1858 he became private secretary to Lord Granville and later to Gladstone, and served as Financial Secretary of the Treasury in 1880-82. From 1865 to 1882 he was a member of the House of Commons. On May 6, 1882, he went to Dublin and was stabbed to death by the "Invincibles."

CAVENDISH, Henry, chemist and philosopher, born in Nice, France, Oct. 10, 1731; died March 10, 1810. He was the eldest son of Lord Charles Cavendish, studied at Cambridge, and devoted his life to mathematics and physical science. In 1766 he discovered hydrogen and thus laid the foundation for pneumatic chemistry. His principal discovery consists of finding that water is a compound of oxygen and hydrogen in certain proportions. He published two important works, entitled "Philosophical Transactions," in which he states his experiments in determining the density of the earth, and "Experiments on Arsenic."

CAVENDISH, Sir Thomas, navigator, born in Suffolkshire, England, about 1555; died in 1592. He studied at Cambridge but did not take a degree, and in 1585 fitted out a ship and went to Virginia. He returned to England soon after and the following year sailed with three small vessels along the western coast of South and North America, from Chile to California, and in this cruise destroyed many ships belonging to Spain. His return trip to England was made by way of The Cape of Good Hope, thus circumnavigating the globe, and he was knighted by the queen. In 1591 he sailed to Patagonia, where he discovered the harbor of Port Desire, but died before returning to his native country.

CAVES, the general designation for subterranean caverns under the crust of the earth. They occur most frequently in limestone regions and were produced by the upheaval of strata, by the erosion of water, or by both causes combined. Some have been greatly enlarged by the action of the water, which carried away sand and gravel, thus eroding the bottoms and sides. Great caves occur in many regions where limestone rocks abound, notably in America, Australia, and Eurasia. Among the most remarkable in America is the Mammoth Cave in Kentucky, which is celebrated for its great size and subterranean streams. It includes more than fifty miles of subterranean passages and is rich in the remains of various extinct animals. The waters are inhabited by fish and other forms of life devoid of eyes. A cave about fifty miles from Los Angeles, Cal., in the Santa Susanna Mountains, is studded with stalactites and stalagmites and has several large halls covering an acre or more. Wyandotte Cave, in Crawford County, Indiana, bears evidence of having been an underground river in prehistoric times. The length, including its various passages, is about twenty-five miles, and in it are some remarkable chambers and gulches.

The Fingal's Cave, on the Island of Staffa, has a roof and many walls formed of basaltic columns. The cave in Franconia, Germany, is another remarkable formation. Many of the caves contain animal remains. Those of South Africa have relics of animals now found only in Asia, and those in Southern Europe contain bones of the hyena, which animal is now common only to Africa. Thus, the different caves bear evidence that many animals formerly numerous are now extinct, and that the existing animals are distributed differently than at former times. Geologists have been able to add valuable information to the study of geological and historical biology by the study of animal fossils found in caves.

CAVITE (kä-vē′tâ), a city in the Philippines, on the island of Luzón, about ten miles southwest of Manila. It is the capital of the province of Cavite and is strongly fortified. It has several fine churches and schools, good dockyards, and a well equipped arsenal. The manufactures include soap, cigars, sugar, oil, and alcoholic beverages. It was the scene of a battle in the war with Spain. Population, 1923, 4,680.

CAVOUR (kä-vo͞or′), **Camillo Benso di,** statesman, born at Turin, Italy, Aug. 10, 1810; died June 6, 1861. He was a descendant of a wealthy and noble family, secured a military education, and became an officer of engineers at the early age of sixteen years. In 1830 he devoted himself to the study of agriculture, introduced the use of guano, and promoted the organization of a national and agricultural society in England. He traveled extensively through the countries of Europe, and studied the principles and operations of the various governments, especially those under written constitutions. In 1847 he established a daily journal devoted to civics, which became an efficient advocate of the interests of the middle classes. The following year he headed a movement in Italy favorable to a constitution, which was granted by the king before the end of the year. He became a member of the chamber of deputies, in 1848. At the time of the war with Austria he counseled an alliance with England, and did effective service in protecting the financial interests of his country. The freedom of the Italian peninsula from Austria was brought about largely through his untiring energy in statesmanship but he resigned in 1859 in consequence of being disappointed with the Peace of Villafranca, by which Austria retained possession of Venetia. Later he became premier and at the same time administered the duties of the ministers of finance, commerce, and agriculture. His policy placed Italy on a stronger financial basis, effected free trade, and weakened the influence of the clergy. He aided Sardinia, Tuscany, Parma, and Modena by concluding an alliance under King Victor Emmanuel, and also strengthened them by making a compact with England and France against Russia. He continued active in statesmanship until his death, and attained to the highest reputation among the statesmen of Italy in the 19th century.

CAVY (kā′vȳ), a small rodent mammal native to South America, allied to the capybara and the agouti. Several species have been described. The cavies are hunted for their flesh and are now nearly extinct in the plains of Argentina. They are active, feed chiefly at night, and spend the day in deep burrows. Some students consider a species of the cavy the ancestor of the guinea-pig.

CAWNPORE (kạn-po͞or′), a city of the Northwest Provinces of India, on the Ganges River, forty miles southwest of Lucknow. It passed under British influence in 1801, and has since ranked as one of the strongly fortified cities. A mutiny broke out in 1857, under the leadership of Nana Sahib, during which nearly all of the Europeans, numbering about 1,000, were massacred. The city is now the seat of government of a province of the same name. It has an important railroad and river commerce. The railroads penetrate from it into the mining and agricultural districts, while telephone and telegraph lines connect it with many important points. The river is 500 yards wide in the dry season, and attains a width of over a mile in the rainy times. Among the manufactures are cotton, woolen, and silk products, tobacco, furniture, machinery, and leather. The city has several large government, religious, and educational buildings. It is improved by parks, electric lights, rapid transit, and waterworks. Population, 1921, 198,690.

CAXTON (kăks′tŭn), **William**, the first printer of England, born in Kent about 1422; died in 1491. The events of his early life are not well known, but it is certain that he was apprenticed to Robert Large, a wealthy mercer of London, in 1439. He set up a wooden printing press in 1476, having previously learned the art of printing at Bruges, Belgium, from Colard Mansion, a printer of that city. The first book printed in the English language was "Recuyell of the Historyes of Troye." The first to be printed in England was "Dictes and Notable Wise Sayings of the Philosophers," in 1477. He translated many of the classics, making more than 4,500 pages, while his printing included many other works. His type was mostly of black letters and consisted of eight fonts. Many of his productions are still preserved and have been exhibited at various times.

CAYENNE (kȧ-ĕn′), capital of French Guiana, located on an island of the same name, at the mouth of the Cayenne River. It has a shallow harbor, which has been improved by dredging. The chief buildings include a college, several hospitals, a number of churches, and the structures erected by the government. Direct steamer communication is maintained with France. The city was founded in 1604 and has been a possession of France since 1675. Population, 1923, 13,500.

CAYUGA LAKE (kȧ-yo͞o′gȧ), a beautiful lake located between Seneca and Cayuga counties, in the central part of New York. It is from one to three miles wide and thirty-eight miles long, the greatest depth being 500 feet. The surface is 387 feet above the level of the sea. Its outlet is the Seneca River, which flows into Lake Ontario. The lake is rich in fish. On its shores are numerous cities and pleasure resorts, including Aurora, Cayuga, and Ithaca.

CAYUGA INDIANS (kȧ-yū′gȧ), a tribe of North American Indians, formerly located near Cayuga Lake, New York. The tribe formed an alliance with the Five Nations, known as the Iroquois, in the 16th century, and which, in 1712, became known as the Six Nations. After the Revolutionary War, it greatly decreased in numbers. At the present time there are about 1,500 members of this tribe, who reside in Ontario, Canada, near the Grand River, but a few are located in Oklahoma and Wisconsin.

CEBU (thȧ-vo͞o′), an island of the Philippines, located between Mindanao and Luzón, containing an area of 4,210 square miles. The productions include sugar and tobacco, while the manufactures consist of abaca, cigars, oil, and sisal goods. It is the seat of the oldest Spanish settlement of the Philippines. Cebú is the capital and principal city. It has a fine cathedral, a seminary, and a well-organized school system. There is a considerable foreign trade. In 1922 the island had a population of 575,630, and the city of Cebú, 15,475.

CECIL (sĕs'il), **William, Lord Burleigh,** statesman, born at Bourne, England, Sept. 15, 1520; died Aug. 15, 1598. He was educated at Saint John's College, Cambridge, where his aptitude and diligence in learning attracted much attention. At the age of twenty-one he entered Grey's Inn for the study of law. His capacity as a student became known to Henry VIII., who appointed him to an office in the common pleas, and he held other offices, among them Secretary of State. His policy and part in the government was of much value, and he furthered its interests at home and abroad, displaying power of decision and a worthy character.

CECILIA (sê-sĭl'ĭ-â), **Saint,** a virgin of Rome, who is supposed to have suffered martyrdom under Marcus Aurelius in 230 A. D. She descended from a family of noble Romans, who betrothed her to a heathen youth named Valerian, but she had previously been converted to Christianity and was condemned to death for her refusal to make sacrifices to the idols. She is regarded the patron saint of music and erroneously thought to have invented the organ. Her festival was fixed on Nov. 22, and is celebrated with vocal and instrumental music. Many musical societies have been named after her. Rubens painted a famous picture of her, Dryden dedicated to her the "Ode for Saint Cecilia's Day," and she is made the hero of one of Chaucer's "Canterbury Tales."

CEDAR (sē'dẽr), the name applied to various cone-bearing trees of the evergreen kind. They are distributed widely and thrive in swamps, valleys, and arid mountain elevations. Among the most famous species is the *cedar of Lebanon,* of which the Bible speaks in these words: "His boughs were multiplied, and his branches became long." Solomon's temple was constructed largely of a species of the cedar of Lebanon. Cedar timber has been useful in all historic times for manufacturing and other purposes. The wood yields an oil useful in preserving books against moths and for embalming. Some species grow to a height of eighty feet and the largest specimens measure sixty-five feet in circumference. The age cannot be estimated by concentric rings as in many trees, since the older owe their vitality to portions of the bark. Botanists think they frequently attain an age of 800 years, while some are estimated at 2,000 years. They thrive at a height of 6,500 feet above the sea.

The *deoder cedar,* a native of India, is classed by botanists as a species of the cedar of Lebanon. It grows abundantly in the Himalayas, and attains a circumference of thirty-five feet and a height of more than 150 feet. Its leaves and cones are larger than those borne by the cedar of Lebanon, and it yields fine material for building and resinous oils. The *atlas cedar* is widely distributed in North Africa. In America and the West Indies the *red cedar* is a common tree. This species is found in the swamps of many sections, as well as on the arid, rocky cliffs of the continental highlands. It is cultivated extensively for ornamental purposes in parks and gardens, and serves as a valuable protection on the Great Plains for barn and house yards against winds and storms. The wood is used extensively for lead pencils, furniture, and boxes in which clothes are protected against moths. In swamps it is of a slender growth, on arid hills it is low and branchy, while in valleys, particularly in California, it attains an immense size. The *arbor vitae,* or *white cedar,* is a common tree in many parts of Canada and the United States. Cigar boxes are made of *Spanish cedar.* However, this species and the American red cedar are not true cedars, though they are coniferous trees.

CEDAR CREEK, a stream in northern Virginia, rises in the North Mountains, and flows into the Shenandoah River. It was the scene of a battle fought on Oct. 19, 1862, between the Union army under General Sheridan and the Confederates under General Early. Sheridan had been called to Washington and left General Wright in command, and while he was away the Confederates made an attack, utterly routing the eighth corps. Wright immediately reformed his lines, making a change of front and a retrograde movement, thus losing heavily during the formation. Just at that time Sheridan, who had heard of the battle at Winchester, appeared upon the scene with his horse covered with foam and inspired his men with such confidence that the enemy was driven back and put to flight with great slaughter. The Union losses were estimated at 5,600, while the Confederates lost about 3,150. The famous ride of Sheridan from Winchester to Cedar Creek was made the basis of Thomas Buchanan Read's famous poem, "Sheridan's Ride."

CEDAR FALLS, a city of Iowa, in Black Hawk County, one hundred miles west of Dubuque, on the Illinois Central, the Great Western, the Rock Island, and other railroads. It is nicely situated on the Cedar River and has connection by an electric railway with Waterloo, which is six miles east. The surrounding country is fertile. It has a brisk trade in produce and merchandise. Among the manufactures are clothing, flour, machinery, and canned goods. It has a public library and is the seat of a State normal school, one of the largest in the United States. The first settlement was made on its site in 1845 and it was incorporated in 1853. Its importance as a city is due to its location on the Cedar River and its excellent public institutions. Population, 1925, 6,841.

CEDAR LAKE, a lake of Canada, in the district of Keewatin, about twenty-five miles north of the province of Manitoba. It receives the drainage from the Saskatchewan River and the discharge is carried by the same river into Lake Winnipeg. It is about thirty miles long, from ten to twenty-five miles wide, and has an area of 315 square miles. Forests of poplar, pine, balsam, and tamarack abound in the vicinity.

CEDAR MOUNTAIN, an elevation situated near the Rappahannock River, in Culpepper County, Virginia. It was the scene of a battle on Aug. 9, 1862, between the Federal forces under General Banks and the Confederates under General Jackson. The Union army was greatly outnumbered and was defeated with a loss of 400 prisoners and 1,400 killed and wounded, besides a loss of stores and a large quantity of ammunition. The confederate loss was 1,314.

CEDAR RAPIDS, a city of Iowa, in Linn County, seventy-eight miles southwest of Dubuque. It occupies a fine site on both sides of the Cedar River, on the Chicago and Northwestern, the Illinois Central, the Chicago, Milwaukee and Saint Paul, and other railroads. Intercommunication is by a system of electric railways, which have lines to Marion and other cities. The chief buildings include Coe College (a Presbyterian institution), the high school, the post office, the public library, and the Masonic Temple. The city has extensive railroad shops, pork-packing establishments, and flouring mills, and manufactures of oatmeal, starch, machinery, and agricultural implements. It has a large jobbing trade. The streets are substantially paved and improved by waterworks, sewerage, and electric and gas lights. The first settlement was made in 1845 and it was incorporated in 1856. Population, 1925, 50,561.

CEDAR RAPIDS, or **The Cedars,** a village on the north bank of the Saint Lawrence River, in Soulanges County, Quebec. It is located at the Cedar Rapids of that river, which is avoided in navigation by the Soulanges Canal. This point was the scene of a military contest in 1776, when the British and a number of Indians under Captain Foster captured four hundred Americans in their retreat from Quebec. Arnold went out from Montreal with a force to attack the captors, but consented to a compromise for an exchange, fearing that the Indians under Brant would massacre the prisoners.

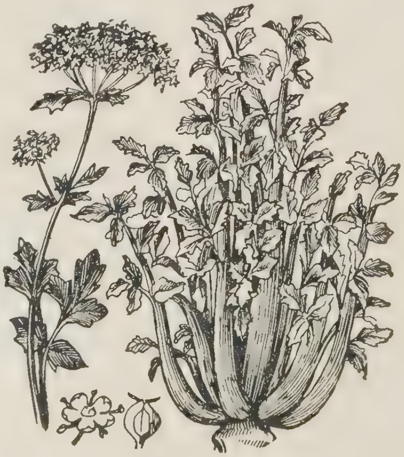
CEDAR RIVER, a river of Iowa, rises in southeastern Minnesota. It has a southeastern course of about four hundred miles, and joins the Iowa River about twenty-five miles above its junction with the Mississippi. Its course is through a fertile region and along its banks are belts of hard wood timber.

CEILING (sēl'ĭng), the upper surface of a room, opposite the floor, usually finished with plaster work, but sometimes with ceiling lumber. In large structures, such as churches and government buildings, the ceiling is often decorated with fine frescoes and other paintings.

CELEBES (sĕl'e-bēz), one of the largest islands of the Indian archipelago, located east of Borneo, having an area of 71,470 square miles. The equator crosses the northern part. On the southern shore is the Bay of Boni and on the eastern, the two great bays of Tomini and Tolo. It was visited by the Portuguese in 1512 and claimed by them. The Dutch took possession of the southern peninsula as early as 1660 and later expelled the Portuguese, and in 1683 acquired possession of the entire island. It is now one of the important Dutch possessions, and is governed by them under a general system for the administration of the colonies. The soil is exceedingly productive, though there are several active volcanoes and earthquakes are not uncommon. The highest peak is Bonthain, height 9,690 feet.

The leading products are coffee, bananas, tobacco, sago, sugar cane, maize, indigo, and tropical fruits. Cattle, buffaloes, horses, goats, and sheep are reared profitably. It has rich deposits of coal, iron, salt, and gold. The manufactures include principally weaving and spinning. The island is noted for its large variety of beautiful birds, including the cuckoo, parrot, and bird of paradise, besides many species of bees, butterflies, and other insects. Among the principal towns are Port Rotterdam, Menado, and Macassar. The last mentioned is the capital and has a population of 21,300. Most of the natives belong to the Malay race. Mohammedanism is the chief religion. Population, 1922, 2,120,640.

CELERY (sĕl'ĕr-ȳ), the name of a plant of the parsley family. In the native state it is acrid and poisonous, being rank and coarse, but under cultivation it has become a wholesome vegetable. It is cultivated extensively for salads and raw consumption. The principal species grown for the market are those that have red or white stalks, which include a number of subvarieties. They include those known as the *Paris Golden, Giant Pascal, Boston Market,* and



CELERY.

White Plume. The stalks are bleached by placing soil about the plants after they are developed. It is useful in the preparation of medicine for nervous disorders and yields an agreeable flavoring. *Celeriac* is a root form of celery and does not require bleaching. Celery thrives best in a well-drained, but deep, rich soil.

CELESTIAL SPHERE (sē-lĕs'chal), a term generally applied to the heavens. The word *celestial* has reference to objects surpassing in excellence anything earthly, and which partake of a divine or angelic nature. China is often called the Celestial Empire, because its rulers claim authority from heaven and assume the title of "Son of Heaven." John Bunyan speaks of heaven in his "Pilgrim's Progress" as the celestial city. Heavenly bodies are often spoken of as celestial bodies.

CELESTINE (sĕl'ĕs-tīn), the name of five Roman popes who ruled in the period included between 422 and 1294. See **Pope.**

CELIBACY (sē-lĭb'ȧ-sȳ), the state of being unmarried, but having especial reference to voluntary abstinence from marriage. Celibacy is followed by several orders of religious denominations, particularly among the Christians by the clergy of the Roman Catholic Church. The custom is of great antiquity and was observed anciently by the priests of Egypt and the priestesses of Greece and Rome. It is now held essential by the Buddhist priests, who are universally pledged to it. There has been more or less contention on the importance of celibacy since the early centuries of Christianity and successive movements were made to abolish it entirely, even some of the leading adherents of Roman Catholicism holding it unnecessary. In the early part of the 19th century several European countries favored abolishing it by compulsory legislation, but with little effect.

CELLINI (chȧl-lē'nē), **Benevenuto,** sculptor, founder, and gold worker, born in Florence, Italy, in 1500; died here Feb. 25, 1570. He went to Rome in early youth and gained favor with the nobles by doing skillful work in metals. He was noted as an expert swordsman, and while at Rome killed the Constable of Bourbon and the Prince of Orange. It is singular that he usually escaped punishment for unlawfully engaging in mortal combats, but, after killing a goldsmith, he was charged with stealing and was imprisoned, and escaped execution with difficulty. He visited France and met Francis I., but soon returned to Florence, where he produced several fine specimens of sculpture and works in bronze, among them "Perseus with the Head of Medusa," which still ornaments one of the public places. He made a statue of Christ, now in the chapel of the Pitti Palace. Later he wrote an account of Italian society in the 16th century and began his autobiography, but did not complete it before his death. A number of the original papers prepared by him are still extant.

CELLS, the minute microscopic cavities in animals which are composed of cell-walls and contain cell contents. A single cell is usually a closed sac, the membrane of which it is constructed being generally nitrogenous formation. Within the sac is a fluid or semifluid *protoplasm* in which *globules, molecules, granules,* or other very minute cells are suspended. The larger cells inclose still other *nucleus cells* containing *nucleolus.* Within and surrounding the nucleus is an albuminous substance vital in principle and which is thought to contain the seat of life. In plants, cells are composed of solid, soft, and fluid layers. They are largely grouped and united, and, in this relation, form a cell tissue. In size they are very small, ranging from 0.004 to 0.002 of an inch in diameter. The cells of the yeast plant are about 0.00032 of an inch in diameter, but the bacteria are still smaller. Most cells are made up of three parts: a firm outer skin, a soft albuminous matter, and an inner cavity filled with a watery fluid called *cell sap.*

The term *cells* is applied to the compartments of a honeycomb and to the inclosed walls of an ancient temple. In physics, the term has reference to a single jar, bath, or division of a compound usually containing a couple of zinc or copper plates united to each other, or to their opposites, by a wire.

CELLULAR TISSUE (sĕl'ū-lẽr), in physiology, the fibro-cellular connectives or areolar tissues which fill interstices between the organs in man and the vertebrate animals. In botany, the term is applied to a tissue composed of a number of separate cells or minute bags holding together. When first formed they are egg-shaped or globular, but afterward become flattened by pressure. See **Connective Tissue.**

CELLULOID (sĕl'ū-loid), a compound resembling ivory in appearance, which can be turned, molded, and manufactured into various products, such as were formerly made of bone and ivory. Its manufacture was first introduced at Birmingham, England, in 1856, but it is now manufactured extensively in America. The process consists of immersing paper in nitric and sulphuric acids, by which it is converted into *nitrocellulose.* After being washed and bleached, a quantity of camphor is added and the mass is passed through a roller mill. At 176° Fahr. it readily softens and can be made into the most delicate forms, and it again hardens after becoming cold. The chief use of celluloid is for the manufacture of napkin rings, piano keys, billiard balls, handles for knives, forks, and umbrellas, backs of brushes, collars, cuffs, buttons, shirt fronts, dolls, and a large variety of other useful products. It can be colored easily, but is inflammable, unless blended with some chemical having an opposite property.

CELLULOSE (sĕl'ū-lōs), a substance which constitutes the basis of vegetable tissues. It is allied to sugar and starch, and is changed into starch by the action of caustic potash, sulphuric acid, or heat. The cell walls of plants consist almost entirely of cellulose during the early stages of development, but it is replaced in part by coloring matter, resins, and other substances as the plant grows. The pith of the Chinese rice-paper plant consists almost wholly of cellulose. Animal tissues do not contain this substance, with the possible exception of the integument of insects, but it is important as a food for animals. It is manufactured and used in making vegetable parchment, collodion, and gun cotton.

CELTS (sĕlts), an ancient Indo-European or Aryan race which formerly inhabited a large part of Italy, Spain, Gaul, and Britain. The descendants of this race still occupy Wales, Ireland, the Highlands of Scotland, and part of northern France. After spreading over large portions of Europe, they appear to have been driven westward by the Teutons, Slavs, and succeeding waves of migratory peoples. They were mentioned by Herodotus as occupying the valley of the Ebro River, with the Iberians, in Spain. They were called Galli by the Romans, and appear to have reached their greatest power in the 2d and 3d centuries B. C. In Asia Minor they settled a region known as Galatia. They eventually divided into two branches and spoke dialects widely different from each other, known as the Gaelic and the Cymric. The Highlanders of Scotland, the Manx, and the Celtic Irish represent the Gaelic; while the inhabitants of Cornwall and Brittany and the Welsh represent the Cymric, or the other dialect. The sun was the object of worship among the Celtic people in former times. They supported a literary order known as the Bards.

CEMENT (sḗ-mĕnt′), the name applied to any matter having elements capable of holding two bodies in close cohesion. In building the name is applied to the mortars consisting of white lead, glue, plaster of Paris, putty, and hydraulic limes containing silica. The cements used in building are known chiefly as *Portland* and *Roman*. Portland cement was patented in 1824 and is so called from its resemblance to Portland stone. It was first manufactured by calcining a proper portion of chalk with clayed mud, and this mass was reduced to a fine powder after being dried. Roman cement is the name applied to hydraulic mortars made by calcining limestone and mixing it with sand in various proportions. It can be prepared from any limestone containing from fifteen to twenty per cent. of clay. The calcining is effected by burning the stone to ashes. *Hydraulic cement* is a mortar used in building piers and walls under or exposed to water. One of the best grades is made of ground Portland stone in the proportion of six to twelve parts mixed with thirty-five parts of sand and three parts of litharge. The cement of ordinary use is made by burning together clay or shale and limestone, but it is not as good as the manufactured product for the reason that limestone contains unequal proportions of iron, silica, and alumina, which in the process of manufacture can be made uniform. Age increases the strength of good cement. See **Concrete.**

CEMETERY (sĕm′ḗ-tĕr-ȳ), a word derived from the Greek, meaning a sleeping place, and applied to burial grounds and other places for the deposit of the dead. The modern cemeteries have taken the place of the burial grounds that were formerly maintained around churches, and came into use in Western Europe as a consequence of the fine burial grounds established by the Turks in the vicinity of Constantinople and other cities. The Turkish burial grounds are famous for their dense forests of cypresses, which are planted by the Mohammedans after burial on the grave of the dead and the grave is never reopened.

In Italy the cemetery is known as the *Campo Santo* (holy field) and is generally an inclosed place. The most famous burying ground is at Piso, near the cathedral and leaning tower, and was founded by Archbishop Ubaldo in the 12th century. Other noted cemeteries of Europe are the Père Lachaise, in Paris; the Kensai Green, near London; and Capuchin Cemetery, near Palermo. Most of the cemeteries in Canada and the United States are located at convenient distances from the center of cities, or, in country districts, in the center of communities. The lots are usually deeded in fee simple, but are sometimes leased for a term of years. The laws govern the care and protection of cemeteries. They are usually cared for by a board of directors appointed by the department of health in cities, or by societies, and quite often are under the ownership of municipal corporations.

The government of the United States owns eighty-three national cemeteries, which are cared for by the United States. In them are buried officers and soldiers who died during the war or while in active service, and those who died after being mustered out and left without ample means to provide a suitable burial. The eighty-three national cemeteries are located in different portions of the Union, but are mostly near the battlefields of the Civil War, or at army posts of the United States. They are under the charge of the quartermaster's department. The number of soldiers interred aggregates 335,453. Among the most celebrated are those at Nashville, Tenn., containing 16,558 graves; Vicksburg, Miss., 16,656; Fredericksburg, Va., 15,285; and Andersonville, Ga., 13,705. The national cemeteries and those located near cities are beautified by monuments, avenues of trees, and splendid walks. The most beautiful cemeteries in the United States are Laurel Hill, Philadelphia; Greenwood, Brooklyn; Spring Grove, Cincinnati; and Mount Auburn, Boston.

CENCI (chĕn'chê), **Beatrice,** daughter of Francesci Cenci, a noble and wealthy Roman, born in 1577; died in 1599. She was reputed of great beauty, and was the object of many cruelties perpetrated by her father. Her father was also guilty of causing the death of his two sons. This crime led to his own death at the hands of Beatrice, her stepmother, and brother. After the discovery of the crime the three were beheaded, in 1599, and the estates of Cenci were confiscated. She was the subject of a painting of great beauty by Guido Reni, and Shelley made her the heroine of his most celebrated and popular play.

CENIS (sẹ-nê'), **Mount,** a mountain of the Alps, located between Piedmont and Savoy, altitude 11,456 feet. It is celebrated for the road constructed, for military purposes, over the pass from the Isère valley in France to Susa in Italy in 1803-10. It is penetrated by an immense railway tunnel, which was completed in 1872 at a cost of $15,000,000. It was constructed by the French and Italian governments and the Northern Railway Company of Italy.

CENOZOIC (sē-nô-zō'ĭk), or **Tertiary,** a division of geologic time, extending from the Mesozoic to the Quaternary Period. It embraces the rock systems of the Pliocene, Miocene, Oligocene, Eocene, and Cretaceous periods. See **Geology.**

CENSER (sĕn'sẽr), a vase or other sacred vessel used by the Hebrews for burning perfume and wafting incense. The censer used by the Roman Catholic Church in mass, vespers, etc., is called *thurible.* It is swung in the air by means of chains for the purpose of diffusing the incense in all directions.

CENSOR (sĕn'sŏr), the title of two Roman magistrates, established by Servius Tullius, but not held by special appointives until 443 B. C. Patricians filled the office until 351 B. C., when a change of the law provided for the election of one plebeian, and in 131 B. C. both censors were plebeians. The term of office originally was five years, but it was soon limited to eighteen months. Among the duties of the office were included taking the census and the assessments, caring for public buildings, supervising the morals of the nation, administering the finances, inflicting disgrace upon those who were negligent or unworthy, and regulating the private life of citizens. The censors ranked in honor second only to that of dictator. The term is now applied to an examiner of books before publication, and to any person who holds the position of a critic.

CENSUS (sĕn'sŭs), an official numbering of the people, together with the collection of other statistics regarding the population, industries, and productions of any district or country. The Israelites were counted by Moses in 1490 B. C. and by David in 1017 B. C. A general census system was established by Servius at Rome, under which an enumeration was taken every five years. Greece and other ancient countries maintained census systems. In the Roman government severe penalties were inflicted in cases where citizens gave in false returns, or refused to make statements, this being necessary because taxation depended upon the census. The first modern European nation to establish a census system was Sweden, where a reliable enumeration was made in 1749. France, Venice, and Florence established census systems before Sweden, but they were not counted reliable. The census of the United States, Switzerland, England, Sweden, Norway, Belgium, Holland, Portugal, and other nations is taken every ten years. In Germany a census is taken every five years; it may be said that the German system dates from Frederick William I. of Prussia. The first census in the United States was authorized by an act of Congress in 1787 and was taken in 1790. Congress also authorized a decennial census; thus one was taken in 1800, 1810, 1820, and every tenth year; the last taken was in 1920. On record they are known consecutively, the last being the thirteenth. The census of Canada is taken every tenth year, in the years ending in 1, as 1901, 1911, 1921, etc.

Congress has general control of the census, and may fix the rules and regulations from time to time. Previously it was under the supervision of the Department of the Interior, which was organized in 1849. Congress placed the eleventh census and succeeding censuses under the immediate direction of the superintendent of the census, who was made the head of the census office. Each State is under a supervisor, under whose direction the enumerators canvass their respective subdistricts in the month of June. The enumerators must visit personally all families and dwelling houses within their respective districts, and ask such questions of the family regarding the age and intelligence as are required by act of Congress. The matters regarding which inquiry is made include age, sex, color, and ability to read and write, as well as facts relating to commerce, agriculture, manufactures, resources of the country, productions, and many other matters of interest regarding the population and products. It is made incumbent upon persons to answer the questions asked them, and a penalty of $30 is placed upon those refusing to answer, with imprisonment until the penalty is paid. The penalty applies to each refusal to answer. The office of the superintendent of the census is virtually perpetual, since it requires ten years to publish all the information regarding the population, productions, general conditions, and other matters of general interest regarding which information is taken by the enumerators.

CENT, from the Latin *centum,* a copper coin of the United States, which has the value of ten mills, or the hundredth part of a dollar. The same value is represented by the cent used in

Canada, and approximately the same by the *centime* in France, the *centesimo* in Peru and Italy, and the *centavo* in Chile and other countries.

CENTAUR (sĕn'tạr), a name first applied to a savage race of people inhabiting the forests and mountains of Thessaly, but later incorporated in the myths of Greece. They are mentioned by Homer as gigantic savages covered with hair, while the poet Pindar refers to them as half man and half horse. It is thought that the myth arose from the appearance of men on horseback in battle against people unacquainted with the uses of the horse, as was the case when the Spaniards invaded Mexico, the Mexicans thinking that the horse and man constituted one animal, as the Grecian centaur. The name is also given to a constellation in the Southern Hemisphere located below the Southern Cross. It contains two stars of the first magnitude and five of the second.

CENTENNIAL EXPOSITION (sĕn-tĕn'nĭ-al), an international exposition of arts, commerce, manufactures, and products of the soil and mines held in 1876 at Philadelphia, Pa. It was designed to celebrate the 100th anniversary of the Declaration of Independence of the United States, and was open to visitors from May 10 to Nov. 10. The grounds on which this first international exposition of America was held included 236 acres, which was a part of Fairmount Park, and about two hundred buildings were erected. The largest attendance on a single day was on Sept. 28, which was Pennsylvania Day, when 274,919 persons entered the grounds. A total of 9,910,996 admissions were recorded during the season, of which 8,004,274 were paid. The leading nations of the world made exhibits of their products and the several states of the United States were represented, hence the exposition furnished facilities for studying the growth and development of industries as well as the quality of products in almost every art and enterprise. In this respect the exposition was profitable, furnishing means to compare and criticise, and as a result much benefit has come to trade and in manufacturing. See **Exposition.**

CENTER OF GRAVITY (grăv'ĭ-tȳ), that point of a body about which all its parts can be balanced. The attraction of gravity on any body tends to draw its particles toward one point, though the direction of these forces are not parallel. However, since the radius of the earth is very large in comparison with the size of any object which is weighed, the diversions of the directions of these forces from parallel lines is practically not measurable. The point at which all the parallel forces that make up the weight of a body meet is the center of gravity, and is sometimes called its *center of mass* or its *center of inertia.* A ring and other circular bodies have their center of gravity on the outside. The center of gravity of bodies that are of homogeneous or uniform specific gravity may be found by geometrical rules.

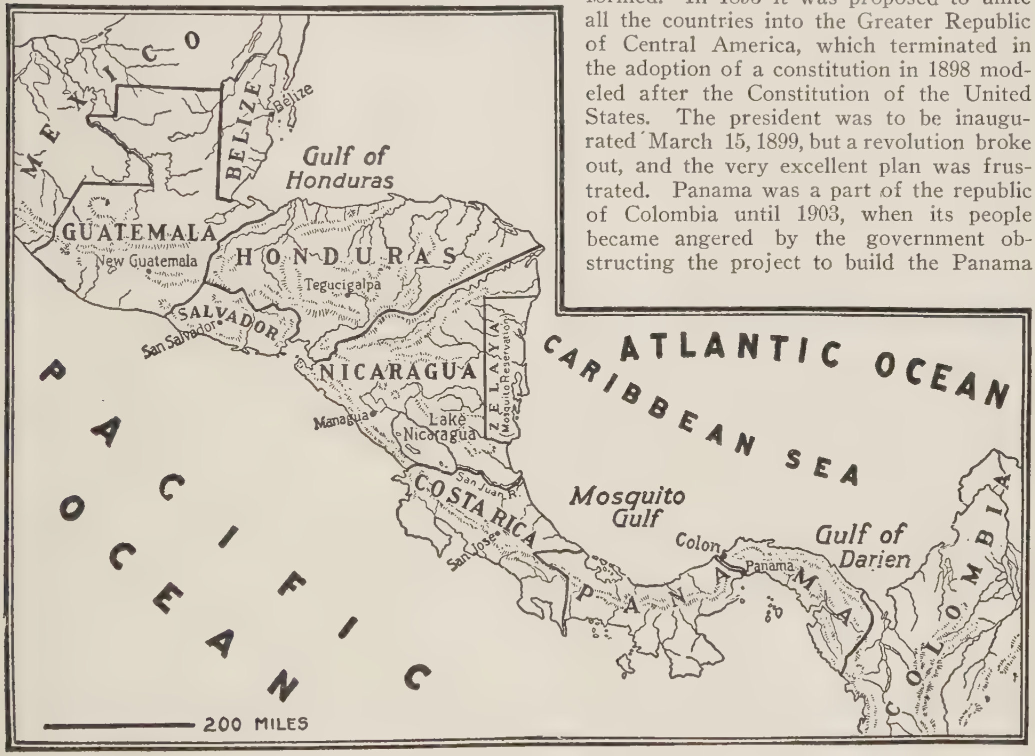
CENTERVILLE, a city in Iowa, county seat of Appanoose County, seventy-three miles southeast of Des Moines, on the Chicago, Rock Island and Pacific, and the Chicago, Burlington and Quincy railroads. It is surrounded by a rich farming and coal producing region, and has a large trade in farm produce. The chief buildings include the county courthouse, the public library, and the high school. It has manufactures of flour, brick, and machinery. The municipal improvements include electric lighting and waterworks. The first settlement was made in 1847 and it was incorporated in 1848. Population, 1905, 5,967; in 1925, 8,611.

CENTIGRADE (sĕn'tĭ-grād), a thermometer graded by Anders Celsius (1701-44), a Swedish astronomer. The scale is divided into one hundred parts, named *grades* or *degrees,* of which the *zero* is fixed at the freezing-point of water and the 100 point at the temperature at which water boils. In the Fahrenheit scale the freezing point is 32° and the boiling point is 212°, hence the proportion of one degree of Fahrenheit to one of the centigrade is as 5 is to 9. That is, the range of the centigrade between freezing and boiling is 100°, while in the Fahrenheit is is 180°; hence, to reduce degrees expressed in the centigrade scale to the Fahrenheit, it is necessary to multiply by 5 and divide the product by 9.

CENTIPEDE (sĕn'tĭ-pēd), an articulated animal having many feet and a body made up of numerous similar segments or rings. It is popularly believed that centipedes have a hundred feet, but this is not accurate. These worms are commonly placed in opposition to the millipede, an animal reputed to have a thousand feet, but the number of its feet is likewise very various. The most prominent distinction between the two is that the centipede has only one pair of legs from every ring of the body, while the millipede has two pairs, except the anterior five or six rings, where there are none. The joints of the centipede are not less than fourteen and the feet consist of from fifteen to thirty pairs, and sometimes even more. They are found largely under stones and decaying wood by day, but come out at night to gather food, their eyes being better adapted to twilight than to the brightness of the day. They are distributed more or less over the entire earth, but are most numerous in the warm countries. Some species in the tropical regions have a length of twenty inches. Many species common to warm countries have a poisonous bite.

CENTRAL AFRICA. See **British Central Africa.**

CENTRAL AMERICA, a portion of North America, occupying the region between Mexico and South America, comprising an area of 210,900 square miles. It is yet sparsely populated, but contains a soil so rich, mineral wealth so extensive, and a climate so agreeable and healthful that a population of 25,000,000 could be supported easily. The surface rises from low coast plains to a height of 12,875 feet above sea level, thus explaining the possibility of cultivating a large variety of products with much success. The slow development of the past two centuries is explained by the unstable government, which is frequently disturbed by political insurrections. Within recent years railroads have developed with some degree of certainty, and the different political divisions have made advances along the line of internal improvement. The productions include lumber, tobacco, corn, sugar, cacao, dye woods, mahogany, coffee, minerals, and fruits.



CENTRAL AMERICA.

Coffee culture is especially profitable, and the production of tropical fruits takes a high rank. The minerals include gold, silver, copper, lead, iron, and quicksilver. Cattle raising is developing, especially in Honduras, while horses and sheep can be grown with much profit. Commerce is in a healthful state of growth with the great trade centers of the world, and is developing locally, especially in the districts where canals are building and in the regions traversed by railway lines.

The governments of Central America are exclusively republics, except the small country of British Honduras, and include Guatemala, Honduras, Salvador, Panama, Nicaragua, and Costa Rica. The principal rivers are Molagua, Belize, Bluefields, San Juan, and Usumacinta. Among the chief lakes are Dulce, Managua, Petén, and Nicaragua. North of Central America is the Bay of Honduras, east of it the Caribbean Sea and Mosquito Gulf, and its western and southern shores are washed by the Pacific Ocean. In 1525 Dom Pedro de Alvarado, one of the companions of Cortez, conquered the country for Spain. It was maintained as a single state under Spanish dominion until 1821, when its independence was secured by revolution. In 1839 a general revolution broke out, and terminated with a treaty under which five countries absolutely independent of each other were formed. In 1895 it was proposed to unite all the countries into the Greater Republic of Central America, which terminated in the adoption of a constitution in 1898 modeled after the Constitution of the United States. The president was to be inaugurated March 15, 1899, but a revolution broke out, and the very excellent plan was frustrated. Panama was a part of the republic of Colombia until 1903, when its people became angered by the government obstructing the project to build the Panama Canal, hence it seceded and assumed independence. The total population of the entire Central America is estimated at 3,585,000. For further information see articles treating of the several countries of Central America.

CENTRAL FALLS, a city of Providence County, Rhode Island, on the Blackstone River, six miles above Providence. It is on the New York, New Haven and Hartford Railroad. Among the chief buildings are the public library and the high school. The manufactures include cotton and woolen goods, machinery, leather, haircloth, thread, and copper ware. It has stone and asphalt pavements, waterworks, gas and electric lighting and electric street railways.

Formerly it was a part of the town of Lincoln, but was incorporated separately in 1895. Population, 1905, 19,446; in 1920, 24,174.

CENTRALIA (sĕn-trā′lĭ-ȧ), a city in Marion County, Illinois, sixty miles east of Saint Louis, on the Southern, the Illinois Central, and other railroads. It is surrounded by productive coal regions and an agricultural country. Among the chief buildings are the Carnegie library, the city hall, the high school, and a number of churches. The manufactures include flour, implements, clothing, machinery, and earthenware. Electric lights, waterworks and a sewerage system are among the municipal improvements. It was settled in 1853 and incorporated in 1859. Population, 1925, 25,403.

CENTRALIA, a city of Washington, in Lewis County, 25 miles south of Olympia, on the Northern Pacific, the Union Pacific, the Great Northern, and the Milwaukee railroads. The vicinity produces coal, lumber, and farm products. It has paved streets, gas and electric plants, sanitary sewers, and growing factories. The features include the city hall, high school, and public library. It was settled in 1870 and incorporated in 1875. Population, 1920, 7,549.

CENTRALIZATION (sĕn-tral-ĭ-zā′shŭn), the act of bringing to the center, or centralizing. The term has come to be applied largely in economics to the tendency of wealth to centralize in the hands of millionaires, and in civics to the administration of government from the central power, instead of through local management. *Localization* and *centralization* stand opposed to each other. One represents the theory that large powers can be safely trusted to the people, while the other, centralization, represents the opposite, that large powers should be vested in those governing through the functions of high office.

CENTRAL PARK, a great central park of New York City, one of the most beautiful in the world, platted in 1858. Its site was once a marshy and rocky locality, which prevented the platting of city lots and the construction of buildings. It consists of 843 acres, with an additional 24 acres on the northwest. Among its attractive features are its lakes, monuments, obelisk, cave, menagerie, and labyrinth. In it are located two great reservoirs of the Croton water system, the American Museum of Natural History, and the Metropolitan Museum of Art. Central Park as a whole, considered in the light of the surrounding edifices, internal wealth, and vast improvements, affords visitors and the public a fine resort for pleasure and recuperation.

CENTRIFUGAL (sĕn-trĭf′ū̇-gal) **and CENTRIPETAL** (sĕn-trĭp′ē̇-tal), terms used in botany to designate inflorescence of two different kinds. The former term is applied when the development of flowers proceeds from the apex toward the base of the axis, and the latter, when it extends from the base to the apex. The elder and valerian are examples of the former and the daisy and hemlock of the latter. For application in physics see **Force.**

CENTURY (sĕn′tū̇-rў̆), the term applied in modern usage to a period of one hundred years. It was derived from the practice of the Roman tribes, who voted in companies of one hundred men each at elections.

CENTURY PLANT, a popular name of the agave or American aloe. It is native to Central America and Mexico. The name arose from the wrong impression that a century of leaf formation and food storage elapsed before the appearance of a flower stalk. It is a plant of beautiful appearance, and develops a cluster of very thick and spiny leaves, from the midst of which, after a number of years, a flowering stalk rapidly rises to a height of from twenty to thirty feet, and bears a large cluster of greenish flowers. After flowering, it dies down to the ground and new plants grow up from the roots. See **Agave.**

CEPHALONIA (sĕf-ȧ-lō′nē̇-ȧ), or **Kephallenia,** an island of the Ionian group, belonging to Greece, of which country it forms a nomarchy. The area is 302 square miles. It has a very irregular coast line and possesses a number of elevated peaks. The surface is largely mountainous. Its rainfall is somewhat deficient, and it is subject to frequent but slight earthquakes. The principal cities include Lixuri, population 6,500, and Argostoli, 9,500. Among the chief exports are textiles, cheese, oil, cereals, wine, and fruits. In former times the island belonged successively to the Athenians, Romans, Byzantines, and Venetians, and was long held by the Turks. In 1797 it came into possession of the French, who were expelled by the Russians, and they in turn by the British. In 1864 it was ceded to Greece. Population, 1922, 84,148.

CEPHALOPODA (sĕf-ȧ-lŏp′ō̇-dȧ), a class of mollusks which have their organs of locomotion arranged in groups about the head. These organs are called feet and arms, either of which name may be properly given, since they serve both as means of locomotion and for securing a hold upon objects. The mouth, situated in the center of the circle of feelers, is furnished with a pair of horny jaws, the tongue is rough and prickly, and the eyes and organs of hearing are well developed. They breathe through gills and most species have something resembling shells, though only the nautilus and argonaut are entirely covered with them. Their arms are supplied with suckers, by which they fasten themselves to and overcome animals much larger and better protected than themselves. The cephalopoda include the cuttlefish, nautilus, octopus, argonaut, and squid. The cuttlefish is entirely unprotected by a shell, but defends itself by throwing out from a bag a dark colored fluid, which is gathered by seamen and forms the valuable pigment known as *sepia.* Many extinct species of cephalopoda are found in fossiliferous rocks.

CERAM (sē̇-răm′), or **Zeram,** an island lying west of New Guinea and belonging to the Moluccas. The area is 6,910 square miles Much of the surface is hilly, but vegetation is luxuriant. It has extensive productions of cabinet wood, sugar, palms, tobacco, rice, and tropical fruits. The inhabitants consist largely of Malays, and the government is administered by Holland. Population, 1923, 208,460.

CERAMIC ART (sē̇-răm′ĭk), the department of decorative and plastic art which comprises objects made of baked clay, as cups, urns, vases, statuettes, and all others included in the variety of porcelain and earthenwares. The Centennial Exposition (q. v.) in 1876 and the tariff law of 1883 operated to increase the American product. Besides the production of pottery proper, the art has been extended to include the manufacture of inlaid floor tiles, panels in relief, and facings. These products are usually decorated by mosaic, arabesque, or damask-finished effects. The enameling and glazing of the best products are held as trade secrets by manufacturers and are known to only a few.

CEREBELLUM (sĕr-ē̇-bĕl′lŭm), the rounded part of the brain, situated above the medulla oblongata and under the cerebrum. It assists the brain to direct precise motion, as movements on which the body is balanced. It is composed of white matter in the interior and gray matter on the surface. The white matter is arranged in a branching manner, hence is sometimes called *Arbor Vitae,* or *tree of life.* In shape the cerebellum is oblong and flattened. It is largest from side to side and is divided into two hemispheres. Three pairs of rounded cords connect it with the rest of the brain.

CEREBRATION, Unconscious (sĕr-ē̇-brā′shŭn), an activity of the brain unaccompanied by mental activity. Many writers on psychology have advanced the theory that all the conscious mental processes are accompanied by molecular changes in the cerebrum, and that similar changes may take place without consciousness on the part of the individual, until the complete mental result is presented. According to this theory the brain works automatically, but unconsciously, which results in suddenly remembering or understanding a previously unknown matter, as a name or incident. Another example of it is an involuntary kick when the foot is tickled. It is best defined as an involuntary response of the motor nerve to an excitement of the sensory nerve.

CEREBRUM (sĕr′ē̇-brŭm), the higher and front portion of the brain. It is the seat of thought and consciousness, receives all sensations, and sends all voluntary impulses and those that produce motion. Like the cerebellum, it is divided into two hemispheres, and these are again divided into an anterior, middle, and posterior lobe. See **Brain.**

CERES (sē′rēz), a personage mentioned in Roman mythology as the daughter of Saturn and Rhea, and regarded the goddess of fruit and agriculture. She is represented in statuary with ears of corn on her head, holding in one hand a lighted torch and in the other a poppy, her sacred flower. Temples were built in her honor at Rome as early as 496 B. C. The first temple in her honor was constructed to ward off a threatened famine, and she was honored by *Cerealia* festivals. The name is also applied to a planetoid discovered in 1801 by G. Piazzi at Palermo, in Sicily. It appears as a star between the seventh and eighth magnitudes and in size is smaller than the moon.

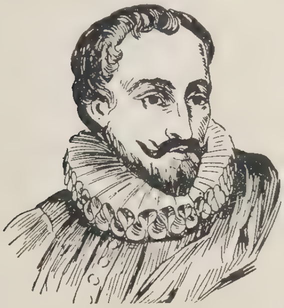
CEREUS (sē′rē̇-ŭs), the name of many species of cactus, about 100, which include several noted for their beautiful flowers. The *night-blooming cereus,* native to South America and the West Indies, is remarkable for its sweet-scented flowers, which open in the evening and fade before morning. During the time it blooms the flower perfumes the air a considerable distance with a sweet scent. The *giant cactus,* native to the arid regions of Arizona and Mexico, is treelike and grows to a height of fifty feet, and at the top of each branch is a cluster of flowers. The natives gather its fruit for food. Another species, the *old man cereus,* is so called from the hairlike growth which appears at the top about the time the flowers open.

CERIUM (sē′rĭ-ŭm), a metallic element discovered in 1803 by Berzelius, and so named from the planetoid Ceres. It is a chocolate-brown, ductile, and malleable metal, has a specific gravity of about 6.2, and forms the two series of salts known as *ceric* and *cerous.* Cerium is not found native, but occurs with other minerals in Sweden, North Carolina, and other places, usually as the silicate of cerite and samarskite.

CERRO GORDO (sĕr′rō̇ gôr′dō̇), a pass in the mountains of Mexico, on the road from Vera Cruz to the City of Mexico. It was the scene of a battle on April 18, 1847, between Gen. Scott, with 8,500 men, and Santa Anna, with 13,000. The Mexican general had retreated from Vera Cruz and took a strong position in the pass, which was assaulted by Gen. Scott, who lost only 431 killed and wounded, while the Mexican army lost 3,000 prisoners, more than 1,000 slain and wounded, about 4,300 stand of arms, and 43 pieces of artillery. Gen. Scott moved to Jalapa the next day and occupied it.

CERTIFICATE (sẽr-tĭf′ĭ-kȧt), a written document certifying to the qualification, conduct, or other advantageous facts more official than a recommendation. In the United States it is commonly understood to be a formal statement made by a public servant in the execution of his duty, as the certificates issued to school teachers and those written by courts, postmasters, and collectors of taxes.

CERUSE (sē′rụs), a name given to white lead, or the carbonate of protoxide of lead. It is prepared by subjecting lead to a treatment of carbonic acid, and by the action of the vapor of vinegar on the slabs of lead, by which the metal is converted into a carbonate. It is used as a cosmetic and is mixed with oil for use in painting.



CERVANTES SAAVEDRA.

CERVANTES SAAVEDRA (sĕr-văn'tĕz sä-vĕd'rȧ), **Miguel de,** author of "Don Quixote," born of a noble Castilian family, on Oct. 9, 1547; died at Madrid, Spain, April 23, 1616. He removed from Alcalá de Henares, the place of his birth, to Madrid at the age of seven years. He was educated at Salamanca and Madrid. His love of poetry caused him to spend much time in writing sonnets, ballads, elegies, and a pastoral romance called "Filena." He served under Colonna in 1570 in the war against the Turks and African corsairs, and lost the use of his left hand in the Battle of Lepanto in 1571. Later he entered the service of the Spanish king, and won the highest honors as a soldier while serving with the troops at Naples. He was taken captive by Arnaut Mami in 1575 and sold as a slave into Algeria, where he remained for seven years. His friends and relatives spent most of their possessions to ransom him in 1580, after which he rejoined his old regiment and took part in the storming of Terceira. In 1583 he retired from military service and engaged in literary work, and the next year published his pastoral entitled "Galatea." He lived retired at Seville from 1588 to 1599, where he held an unimportant office and prepared a number of writings for the stage. The total of this class of productions includes between twenty-five and thirty. His most celebrated work is "Don Quixote," the first part of which appeared in 1605. This production sprung into popularity at once on account of its satirical treatment of the chivalric novels then popular. It embodies human types of marked interest, and exercised a profound bearing upon private and public life. The last of this noted production did not appear until 1615, and it, with other portions, attained sufficient popularity and influence upon Spanish customs to cause many changes of dress and habit. Other productions from his pen are "Exemplary Novels" and "Journey to Parnassus."

CERVERA Y TOPETE (thâr-vā̇'rȧ ē̇ tō̇-pā̇'tā̇), **Pascual de,** soldier, born of wealthy parents in the province of Jerez, Spain, in 1833. He graduated at the naval academy at San Fernando in 1851, and accompanied the Spanish expedition to Morocco, where he rose to the rank of first lieutenant. He served in Cochin China in 1862, and in Peru in 1868-70, and was transferred to Cuba and stationed at Santiago de Cuba. At that place he was hemmed in by the American fleet and on July 3, 1898, was defeated by Commodore Schley, while Commodore Sampson was absent, as he was attempting to escape. Cervera was recognized as the foremost naval commander of Spain in the Spanish-American War. He died April 3, 1909.

CETACEA (sē̇-tā'shē̇-ȧ), an order of marine animals, having no hind feet and including species that surpass in size all others now living. Their form is like that of fishes, with the exception that the tail is horizontal, thus enabling them to rise rapidly to the surface of the water for respiration in the air, which is necessary, as they breathe with lungs. They are true mammals, since they suckle their young, and are warm-blooded. They are commonly divided into cetacea herbivora and cetacea ordinaria; the former division includes the dugongs, lamantins, and stellerida, and the latter, the dolphins, whales, narwhals, porpoises, and cachalots. Remains of these animals are found in the deposits of the Eocene period and extend from that epoch to the present time.

CETTE (sĕt), a city of France, in the department of Hérault, twenty miles southwest of Montpellier. It is situated on the Mediterranean Sea, is well fortified, and has an important domestic and foreign trade. A deep canal connects the harbor with the lagoon of Thau, which is near the city, and through it transportation facilities are furnished by the Rhone and other streams. It is a railroad center and has electric railway facilities. Among the chief manufactures are chemicals, perfume, machinery, sailing vessels, and canned fish and oysters. The city has a number of fine buildings, including numerous schools and churches, and is supplied with modern utilities, such as paving and electric lights. It was founded in 1666. Population, 1921, 33,243.

CEUTA (sū'tȧ), a Spanish town on the northern coast of Africa, located on a small promontory in Morocco, eighteen miles south of Gibraltar. It is well built and strongly fortified. The chief buildings include those of the government and a cathedral, and it belongs officially to the province of Cadiz. Ceuta was founded by the Romans and was annexed to Spain in 1580, since which time it has served mainly as a penal settlement. Population, 1922, 14,350.

CÉVENNES (sā̇ vĕn'), a range of mountains in the southern part of France. It extends a distance of about 400 miles, from the Vosges in the northeast to the Pyrenees in the southwest, and separates the basins of the Loire and the Garonne from those of the Rhone and the Saône. With it is included the Côte d'Or, which is sometimes classed with the Vosges system. Mont Mézenc, the highest peak, has an elevation of 5,754 feet, and the average elevation is about 3,500 feet. The rocks consist chiefly of limestone, sandstone, and granite. The Albigenses, the Camisards, and the Waldenses were sheltered from persecution in these mountains during the religious warfares of France.

CEYLON (sē-lŏn′), a large island in the Indian Ocean, lying southeast of the peninsula of Hindustan, to which it is almost joined by a chain of reefs known as Adam's Bridge. It is separated from continental Asia by the Gulf of Manar and Palks Strait. The length north and south is 265 miles; greatest breadth, 140 miles; area, 25,332 square miles. The soil is exceedingly fertile. Large tracts consist of marshy flats and jungles, but where these have been drained they constitute the richest and most productive land. The animals common to Asia abound on the island and consist of crocodiles, pangolin, armadillos, wild hogs, monkeys, jackals, buffaloes, leopards, hyenas, elephants, bears, flying foxes, numerous snakes, and a large variety of beautiful birds of song and plumage. The most important stream is the Mahavelliganga. Other rivers include the Kalawa, Oga, Moondini Aar, and Gindura Ga. The forest productions are exceedingly valuable, and the fisheries and minerals are a considerable source of wealth. The productions and exports consist largely of live stock, coffee, tea, plumbago, cinchona, cinnamon, tobacco, cereals, cocoanuts, and many varieties of excellent fruits. Among the minerals are iron, zinc, salt, and plumbago.

The history of Ceylon extends back to remote antiquity, but authentic accounts date only to the year 543 B. C., when it was governed by a series of kings, who had their seat of government at the ancient capital of Anuradhapura. In the year 307 B. C. Buddhism was introduced by the invaders of India. Indian civilization was a potent factor in the building of cities and the development of agriculture, commerce, and the arts. The capital city was a place of much wealth and magnificence, a fact attested by the ruins still found at its former location. Ceylon became known to the Europeans at the time of Alexander the Great, when he made his noted expedition from Greece to India. The Malabars invaded it in the Middle Ages and later it became tributary to China. When visited by Marco Polo, near the end of the 13th century, it had declined materially in prosperity. In 1505 it was visited by the Portuguese and later was made subject to them. At that time the seaports in the northern part of the island were held by the Arabs, or Moors, who carried on an extensive trade, and those in the southern part were in possession of the Malabars.

In 1658 the Dutch expelled the Portuguese, and they in turn were conquered by the British in 1796, but it was not annexed by the latter until 1817. The island still remains under British influence. It is governed by a local magistrate and an executive council of five members, and the legislative power is vested in a council of seventeen members. Buddhism is the prevailing religion, though there are a considerable number of Christians and Mohammedans. Several railroads, highways, and telephone and telegraph lines are maintained. A plan has been projected to connect the island with the continent by railway. Colombo is the capital. Among the other important cities are Jaffna, Point de Galle, Kandy, and Trincomali. Population, 1923, 3,680,195.

CHADBOURNE (chăd′bûrn), **Paul Ansel,** educator, born at North Berwick, Me., Oct. 21, 1823; died Feb. 23, 1883. He attended Williams College, where he graduated in 1848, and subsequently studied at the Hartford Theological Seminary. For some time he was principal of the high school at Great Falls, Mont., and subsequently held professorships in Williams College and Bowdoin College. In 1867 he was elected president of the University of Wisconsin, where he was eminently successful as an instructor and director. He was made president of Williams College in 1872, as successor of Mark Hopkins, and in 1882 became president of the Massachusetts Agricultural College. He was a member of the Massachusetts Senate a number of years, and was editor in chief of "The Wealth of the United States." His publications include "Natural Theology" and "Instinct in Animals and Men."

CHADWICK (chăd′wĭk), **George Whitfield,** composer, born in Lowell, Mass., Nov. 13, 1854. He began the study of music at an early age and subsequently took instruction under Reinecke and Jadassohn in Germany, where he remained about three years. In 1880 he returned to America and became instructor of music in the New England Conservatory of Music, of which he was director a number of years. His compositions include "Columbian Ode," "Judith," "Rip Van Winkle," and "The Viking's Last Voyage."

CHADWICK, John White, clergyman, born in Marblehead, Mass., Oct. 19, 1840; died Dec. 11, 1904. He graduated at the Harvard Divinity School in 1864, and soon after became a minister of the Second Unitarian Church in Brooklyn, N. Y. As a pulpit orator and student he is known as one of the prominent preachers of that denomination. He published a large number of religious works and some biographies. These include "Origin and Destiny," "Belief and Life," "The Faith of Reason," "A Daring Faith," and "The Old and New Unitarian Belief."

CHAFFEE (chăf′fē), **Adna Romanza,** soldier, born at Orwell, Ohio, April 14, 1842. He attended the public schools and in 1861 entered the Union army. In 1865 he was promoted to the rank of first lieutenant, and in the same year was brevetted captain for gallant service at Dinwidde Court House. He was made lieutenant colonel in 1897, and the following year saw service in the Spanish-American War, in which he distinguished himself at El Caney and was raised to the rank of major general of volunteers. In 1900 he had charge of the United States forces in China, where he took part in the expedition against Peking. The following year he was put in command of the army in the Philippines, was relieved in 1902, and in 1904 was appointed chief of staff of the United States Army. He retired from active service in 1906 and was succeeded by Gen. John C. Bates. He died Nov. 1, 1914.

CHAGOS (chä'gŏs), the name of a small island archipelago in the Indian Ocean, a colonial possession of Great Britain and a dependency of Mauritius. These islands are of coral formation. Diego Garcia, the largest island of the group, is about six miles wide and twelve miles long, and has a population of 526. Fruit and cocoanut oil are the chief products. Population, 1922, 1,028.

CHAGRES (chä'grĕs), a seaport of Panama, on the Caribbean Sea, at the mouth of the Chagres River. This stream is about 100 miles long and flows nearly across the isthmus of Panama, entering the sea a short distance west of Colon, and its waters are used in connection with the Panama Canal. The town has a considerable trade and will be benefited as an outlet when the canal is completed. Population, 1,175.

CHAILLU. See **Du Chaillu.**

CHAIN, in surveying, a line made of a hundred iron links, each 7.92 inches long. Its total length is four rods, or sixty-six feet, and ten square chains equal one acre. It is often called *Gunter's chain* from its inventor.

CHAIN, a line formed of a series of metal links, connected with or fitted into each other. In the manufacture of chains the best quality of soft iron is used, as they require strong material possessing capability of being easily welded. Chains are used for support, connection, restraint, transmission of mechanical power, and many other purposes in construction and machinery. The chain pump has an endless chain and is used mainly for pumping water from deep wells.

CHAISE (shāz), a vehicle with two wheels, usually drawn by one horse, and furnished with a calash top. The body is hung on leather straps, or through braces, and is intended for two persons. Oliver Wendell Holmes in his poem, "The Wonderful One-Hoss Shay," immortalized this kind of a vehicle. More recently the name has come to be applied to a light carriage with four wheels.

CHALCEDON (kăl-sē'dŭn), a city of ancient Bithynia, in Asia Minor, near the Bosporus, opposite Byzantium. It was about one mile distant from the site of the present city of Constantinople and its site is now occupied by the modern town of Kadiköi. It was founded about 685 B. C. and was long important as a military and commercial center. The Romans captured it in 74 B. C. and made it a free city. In 451 A. D. it was the seat of a general council of the Christian Church, which was attended by 600 bishops and other representatives. It was convoked by Emperor Marcianus to settle the doctrinal disputes of the Nestorians and Monophysites, and after long deliberations it adopted the orthodox confession of faith, adjusted differences between the sees of Antioch and Jerusalem, and defined the duties and obligations of bishops

CHALCEDONY (kăl-sĕd'ŏ-nў), a beautiful mineral quartz mixed with opal. It is named from Chalcedon in Bithynia, where it is found in considerable quantities. It also exists in basaltic rock formations, such as abound in Iceland and Scotland. The varieties are different in color and hardness. When arranged in stripes or layers chalcedony is called *agate;* if the stripes or layers are horizontal, it is termed *onyx;* besides these are greenish, flesh-red, and grayish-red varieties. Many species of chalcedony are either transparent or translucent with a luster nearly the same as that of wax. The principal uses are for ornaments, necklaces, and brooches. Chalcedony is a favorite article for cups, ornamental boxes, and souvenirs. Various articles and figures made of chalcedony by the ancients may be seen in the museums of America and Europe. Some varieties are rich in vegetable fossils, which were likely incased while the mineral was forming.

CHALCIS (kăl'kĭs), a town of Greece, capital of the nomarchy of Euboea, 18 miles northeast of Thebes. It is on the island of Euboea, which is separated from the mainland by the strait of Euripos, and the strait is crossed by a stone bridge about 120 feet long. Through the narrow channel passes a strong current, and this has been improved by deepening so the larger vessels can pass safely through it. It is thought that the vicinity of Chalcis was colonized from Athens at a very remote date, and it is known that Aristotle died here in 322 B. C. The Venetians captured it in 1205 A. D., but it passed to the Turks in 1470 and to the Greeks in 1821. The streets are narrow and few ancient ruins are in the vicinity. Most of the inhabitants are Greeks and Italians, but a few Mohammedans and Jews reside here. Population, 1922, 10,150.

CHALDAEA (kăl-dē'ȧ), in ancient geography, the southern part of Babylonia, but the name is applied by some writers to the entire Babylonian Empire. The Chaldaeans were devoted to the pursuit of natural astronomy and magical science. Their language consisted of the Aramaean, one of the principal dialects of the ancient Semites. The portion of the Bible including Daniel from Chap. ii, 4, to Chap. vii, 28; Ezra, Chap. iv, 8, to Chap. vi, 18; Chap. vii, 12-16; and Jeremiah, Chap. x, 11, were written in the Chaldee language, but it included several shades of dialects. A number of the Jewish writings were in the Chaldee language. See Babylon.

CHALDEE LANGUAGE (kăl'dē), the eastern dialect of the Aramaean language, of which the Syriac is the western branch. It was written in cuneiform characters, probably borrowed from the Assyrians, and its literature is known to us only through the writings of Jews. Many inscriptions have been discovered in modern Armenia that are assigned to this language, though they show some differences in the dialects, and they are generally classed with the Hittite and other early languages of Asia. The older writings in the Chaldee language are represented in certain chapters of the books of Ezra, Daniel, and Jeremiah, and the more recent are found in the later writings of Jews, such as those in the *Targums.* It is thought that Abraham used the Chaldee language before migrating to Palestine.

CHALEURS BAY (shȧ-lẽrs'), an inlet on the eastern shore of the Gulf of Saint Lawrence, which forms part of the boundary between Quebec and New Brunswick. Its length from east to west is about ninety miles, the breadth is from twelve to twenty miles, and the depth is about 250 feet. It received the discharge from a number of small streams, including the Patapedia River from the west and the Nepisiguit River from the south. The fisheries are important, and it has deep water in many places along the shore, affording safe anchorage for large vessels. It was so named by Jacques Cartier, who discovered and explored it in 1535.

CHALICE (chăl'ĭs), an ordinary drinking cup used by the ancients, but the term is now applied to the cup in which the wine of the holy sacrament is administered. It consists of the foot, the stem, the knop, and the bowl. In most cases the foot or base is wide so as to prevent the vessel from upsetting. Anciently the chalices were made of wood, horn, or gold, but now they are chiefly of gold, silver, or glass, and are adorned with elaborate designs. Some are enriched with inscriptions and even settings of precious stones.

CHALK (chạk), an earthy limestone belonging to the cretaceous system. It is white, yellowish, or grayish in color and readily imparts its color to surfaces over which it is rubbed. Chalk is composed mainly of the mineral remains of animals, such as the teeth of fish and reptiles and the shells of turtles and mollusks. On the coasts of France and Great Britain, and in other localities, it occurs in quantities sufficiently large to form cliffs many feet high. Texas has a belt of chalk deposits that is about 250 miles long and 600 feet thick. In laying the Atlantic cable great oozes were discovered, proving that the process of formation is still going on in the sea at a depth of from 5,000 to 15,000 feet. The principal uses of chalk are for writing on blackboards, for cleaning purposes, for manure when burnt with lime, and for medicine. Several varieties furnish a fine mortar and whitewash. Red chalk consists of a clay-iron ore and black chalk contains a carbon, while French chalk is a kind of soapstone. These well-known varieties are used extensively in making colored crayons and in drawing.

CHALLENGER EXPEDITION (chăl'lĕn-jẽr), an exploration made by the British government in 1872-76. The *Challenger,* a vessel of 2,306 tons, was sent out in 1872 to make soundings and study the surface as well as the bottom of the sea. Captain Nares had charge of the expedition, and during the three and a half years traveled 68,900 nautical miles. The depth and the character of the surface and bottom, including the temperatures, currents, atmospheric conditions and fauna, were studied at 362 stations. The deepest soundings were made between Japan and the Admiralty Islands, where the depths were found to be 4,575 fathoms.

CHAIN STORES. The movement to build up the chain store system has grown with remarkable strides the past ten years. In 1929 there were 3,900 chains in the United States, embracing a total of 101,550 stores.

Below is a list of sales in a representative month of 1927 and 1928, the month of August. This list includes only a few of the establishments that are now operating as well known business concerns:

	1928	1927
Sears Roebuck	$28,985,684	$23,969,681
Woolworth	21,812,450	21,400,355
Montgomery Ward	17,007,642	13,825,103
Kroger, G. & B.	15,262,780	11,906,425
Kresge, S. S.	11,271,985	10,512,989
Safeway Stores	9,098,808	6,816,158
Kress, S. H.	4,850,125	4,564,155
Grant, W. T.	3,996,322	3,113,746
McCrory Stores	3,115,524	3,036,677
Walgreen Co.	2,664,124	1,825,373
Nat. Bellas Hess	1,943,669	1,788,732
Sanitary Groceries	1,769.484	1,198,002
Newberry, J. J.	1,599,834	1,229,164

CHALMERS (chä'mẽrz), **Thomas,** clergyman, born at Fife, Scotland, March 17, 1780; died in Edinburgh, May 30, 1847. He graduated at Saint Andrews University, and entered the ministry at the age of nineteen years. When the Church of Scotland was agitated on several questions, he led a following of nearly 500 ministers and founded the Free Church. He was an active writer. Among his works are "Use and Abuse of Literary Endowments" and "On the Adaptation of the External Nature to the Moral and Intellectual Constitution of Man." He ranks as one of the purest and most sincere among Scottish ministers, and gained a lasting reputation for superb oratory and devoted piety.

CHÂLONS-SUR-MARNE (shä-lôn'sür-märn'), a city of France, capital of the department of Marne, ninety-five miles east of Paris. It is nicely located on the Marne River, which is crossed by a fine stone bridge, and has extensive railroad conveniences. It has a seminary, an industrial school, a museum, and a public library. The manufactures include leather, machinery, and cotton and woolen fabrics. It has a brisk trade in grain, merchandise, and champagne. Châlons was captured by Aurelian in 274 A. D., and near it were defeated Attila and his Huns, who had made an attack on the Romans and Visigoths. It was captured by the Germans in 1814 and again in 1870. Napoleon III. established a military training camp near Châlons in 1856. Population, 1922, 21,860.

CHÂLONS-SUR-SAÔNE (sür-sôn'), a city of France, capital of a district in the department of Saône-et-Loire, thirty-two miles north of Mâcon. It is on the Saône River, at a point where the Canal du Centre joins that river with the Loire. The surrounding country has fine vineyards and cultivated fields. Many of the streets are irregular, but some of the newer buildings are modern and commodious, and the streets are well improved with paving and drainage. It has a college, several fine churches, and a public library of 25,000 volumes. The manufactures consist chiefly of pottery, clothing, jewelry, and hats. It has a growing trade in live stock and agricultural products. Population, 1921, 26,850.

CHAMBER (chām'bẽr), the term used in many countries to denote the legislative branch of the government, as the chamber of deputies in France, and the imperial chambers of the German Empire in the time of Maximilian I. Chambers of commerce are organizations which are maintained by business men in cities to further commercial interests. See **Board of Trade.**

CHAMBERLAIN (chām'bẽr-lĭn), **Jacob,** missionary, born in Sharon, Conn., April 13, 1835. He attended public schools and in 1856 graduated at the Western Reserve College, and subsequently received degrees from New Brunswick Theological Seminary and from the College of Physicians and Surgeons in New York City. In 1859 he went as missionary to India, where he labored with much ability nearly half a century. His efforts in the missionary field were eminently successful and he won a wide reputation, being noted as an orator and sympathetic worker in the Christian cause. His publications include "Native Churches and Foreign Missionary Societies," "A Home, or Christian Giving," "In the Tiger Jungle," and "The Cobra's Den and Other Stories of the Telugus of India. He died March 2, 1908.

CHAMBERLAIN, Joseph, statesman, born in London, England, July 1, 1836. After graduating from University College, he became a member of the screw-maker firm of Nettleford & Co., Birmingham, and devoted himself to business for a number of years. He was elected mayor of Birmingham in 1873, serving three terms consecutively, after which he was elected to Parliament for Birmingham, where he distinguished himself for able discussions and by articles contributed to the leading periodicals. In 1880 he was chosen president of the board of trade with a seat in the Cabinet. He resigned from Parliament in 1886 on account of Gladstone's Irish policy, and was later appointed a British member of the commission which met at Washington, D. C., to arbitrate the fishery dispute between the United States and Canada. In 1892 he became the leader of the Liberal-Unionists, and took the office of Colonial Secretary in the Tory Cabinet under Lord Salisbury. His reputation is based largely on his advocacy of imperial federation and home government for the colonies, and his skillful management in the awkward position into which the government was thrown in 1895 by the Jameson raid in South Africa. Since then he has continued to exercise marked influence in British politics. In 1903 he advocated a tariff on all importations, except from the colonies of Great Britain. He died July 2, 1914.

CHAMBERLIN, Clarence D., aviator, born at Denison, Iowa, in 1894. He attended the public schools in his native city and later studied at the Iowa State College in Ames, where he majored in electrical engineering. He was in the automobile business at Denison at the beginning of the World War and enlisted for service, entering the signal corps, but soon changed to the flying branch, becoming a flying cadet.

In 1927 he was chosen by Charles A. Levine, owner of the *Columbia* plane, to make the second friendly flight across the Atlantic, the objective point being Germany. The start was made from Roosevelt Field, N. Y., on Saturday morning, June 4, and the non-stop flight ended at Helfta, a suburb of Eisleben, in the state of Saxony, 110 miles southwest of Berlin. The actual distance traveled was 3,911 miles as against 3,800 miles credited to Colonel Lindbergh in the first flight across the Atlantic.

CHAMBERS (chām'bẽrz), **Ephraim,** author, born at Kendal, England, in 1680; died May 15, 1740. In 1728 he published the first edition under the title "Cyclopaedia, or an Universal Dictionary of Arts and Sciences." This work was translated into French and inspired Diderot and D'Alembert to issue their famous "Encyclopédie," and it likewise formed the basis of Abraham Rees's "Encyclopaedia."

CHAMBERS, Robert William, author, born in Brooklyn, N. Y., May 26, 1865. His first noted writing is an account of the Commune, entitled "The Red Republic," which established his position as a worthy writer. Among his other works are "The King in Yellow," "The Maker of Moons," and "The King of a Few Dukes."

CHAMBERS, William, historical publisher, born at Peebles, Scotland, April 16, 1800; died in Edinburgh, May 20, 1883. In 1832 he founded the *Chambers' Edinburgh Journal* in connection with his brother, Robert Chambers (1802-1871), which was among the first of the cheap and popular periodicals. In 1877 he received the degree of LL. D. from the University of Edinburgh, in which city a statue has been erected to his memory. Among his publications are "The Youths' Companion and Counselor," "Historical Sketch of Saint Giles' Cathedral," "Stories of Remarkable Persons," and "Ailie Gilroy."

CHAMBERSBURG, a borough in Pennsylvania, county seat of Franklin County, fifty-two miles southwest of Harrisburg, on the Western Maryland, the Philadelphia and Reading, and other railroads. It is surrounded by a mineral and agricultural district, and has a large trade in produce and merchandise. Its industries include flouring mills, iron foundries, and factories for the production of furniture, shoes, farm machinery, and wood products. It is the seat of Wilson College and a fine school system. The municipal improvements include electric lights, waterworks, a public library, and street pavements. It was settled by Benjamin Chambers in 1730 and was incorporated in 1803. Population, 1900, 8,864; in 1920, 13,171.

CHAMBLY (shän-blē'), a town of Quebec, in Chambly County, about twenty-five miles southeast of Montreal. It is situated on the Richelieu or Sorel River, at the rapids of the river, the outlet of Lake Champlain, and is connected by canal with Saint Johns. The British had a post at Chambly in 1775, and General Montgomery, who was besieging Saint Johns, aided by some Canadian scouts, surprised and captured the post after a short fight. The Americans secured a large quantity of provisions and military stores and captured the colors of the seventh regiment of British regulars, which was sent to the Continental Congress as the first trophy of war received by that body. This disaster hastened the downfall of Saint Johns.

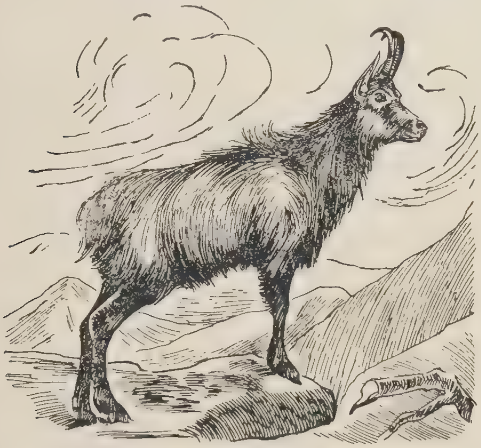
CHAMBORD (shän-bôr'), a village of France, in the department of Loir-et-Cher, ten miles east of Blois. It is noted for a castle of its own name, which is surrounded by a beautiful park twenty-one miles in circumference. This castle was begun in 1526 under the direction of Francis I., and was given by Louis XV. to Marshal Saxe, who lived here from 1745 until his death in 1750. Napoleon I. bestowed it on Marshal Berthier, and in 1821 it was purchased and presented to the Duke of Bordeaux, who afterward became the Count of Chambord. This building has 440 rooms, is in the Renaissance style, and is surmounted by six towers, each of which is sixty feet in diameter.

CHAMBORD, Henri Charles Ferdinand Marie Dieudonné, Comte de, pretender to the French throne, born in Paris, France, Sept. 29, 1820; died at Frohsdorf Castle, Austria, Aug. 24, 1883. His father, the Duke de Berri, was assassinated seven months before his birth. He gave up his original title, Duke of Bordeaux, in 1844 and assumed the title of Chambord, and his grandfather, Charles X., abdicated in his favor in 1830. Later the Bourbons were driven into exile. Subsequently he assumed the title of Henry V. and sought to attain the throne, but was compelled to live in exile all his life.

CHAMELEON (kȧ-mē'lē-ŭn), a genus of reptiles belonging to the order of lizards, and native to Eurasia and Africa. They are sluggish and move silently and slowly, but possess remarkable quickness of eye and tongue. The tongue is wormlike and is thrust out with much precision in catching insects, upon which they feed. In size they range from six to eight inches long, with a tail about five inches, and the feet are suitable for fastening themselves to branches. They have but five cervical vertebrae, five toes, and very large lungs, and are reproduced by means of eggs. Their capacity to inflate themselves with air has given rise to the fable that air is their food, but this is erroneous, as they live on insects caught by thrusting the long, viscid tongue outward and grasping flies, beetles, and other insects. The peculiarity of chameleons consists mainly in their ability to assume colors agreeable to their surroundings, thus rendering themselves in appearance like the leaves or branches of the trees for protection. Some writers assert that they change colors, at least in some cases, to display displeasure when they are disturbed. These changes are brought about by cells at various depths in the skin, by which expansion and contraction are effected, the contractile cells being under the influence of the nervous system.

CHAMINADE (shȧ-mē-nȧd'), **Cécile Louise Stéphanie,** composer, born in Paris, France, in 1861. She began to play and compose at the age of eight years, and studied music under the leading pianists of France. In 1879 she made her début as a pianist, appearing successfully in many cities of continental Europe. Her compositions are very numerous and many of them are popular throughout the world. Her best known instrumental composition is entitled "The Scarf Dance." She is the author of many popular songs, some of which were introduced by Nordica and Plançon. Among the number are "Rosamunde," "Madrigal," and "The Silver Ring."

CHAMOIS (shăm'mỹ), the only wild antelope found in Europe, known to the Germans as the *gemse.* It is found in the Alps, Carpathians, Pyrenees; in Greece, and in Western Asia, particularly in the Taurus and Caucasus mountains. In size it is about three feet long and two feet high, and is similar to the roebuck in structure and general characteristics. Its horns are from six to eight inches long. They are smooth, round, and straight, with a short curve at the ends. The hairs are longest in the winter and of a chestnut-brown color, but in the summer season assume a much lighter hue, approaching gray in the spring. It inhabits the precipitous and rocky mountain peaks, moving to higher altitudes in the summer season and to the lower slopes in the winter. Herds of from ten to twenty feed in the mornings and evenings, while in the day they are inclined to seek places of safety, usually isolating themselves for that purpose. The habits are quick and watchful, and the power of smell is remarkable, thus rendering capture difficult. The flesh is a favorite article of food, while the celebrated chamois skin is made from the hide.



CHAMOIS.

CHAMOMILE (kăm′ô-mīl), or **Camomile,** a plant native to Southern Europe, but now cultivated extensively in gardens. It has branched stems, is perennial, and bears a white flower with a yellow center. It yields an essential oil useful in medicine. The leaves and flowers are used for an infusion, as a stimulant, and for poultices.

CHAMOUNI (shȧ-mo͞o-nē′), or **Chamonix,** a famous valley and village located among the Alps in France. The village is the gathering place of about 20,000 tourists annually, on account of the beautiful location and grandeur of the scenery found in the valley and adjacent mountains. The valley is located 3,400 feet above sea level, is two miles wide and thirteen miles long, and south of it is the celebrated group of Mont Blanc. Vast glaciers slide from the mountains. The large lake of ice called Mer de Glace merges into the Glacier de Bois, which reaches to the lower portion of the valley even during the summer season. Mont Blanc, as seen from the village, affords a view that is remarkable for its simple and massive sublimity, and has caused an inspiration for beautiful writings by Shelley, Byron, Wordsworth, Coleridge, Lamartine, and Ruskin.

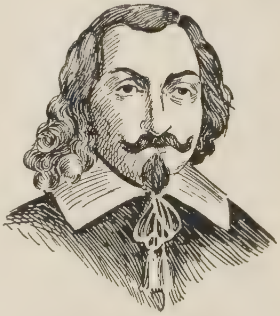
CHAMPAGNE (shăm-pān′), a celebrated brisk and sparkling wine now made chiefly in the department of Marne, but formerly in the province of Champagne, France. The finest quality is made of black grapes, but similar grades are made in Germany. The effervescent wines made in Spain are pronounced equal to the best French product.

CHAMPAIGN, a city of Champaign County, Illinois, 127 miles southwest of Chicago, on the Illinois Central, the Wabash, and other railroads. It is surrounded by a fine agricultural country. The streets are improved by avenues of trees, pavements, waterworks, and sewerage. It has a public library, a fine high school, and a fine public park. The manufactures include machinery, cigars, earthenware, and implements. The University of Illinois is located near the city. It is connected with Urbana, the county seat, by an electric railway. Champaign was settled in 1855 and incorporated in 1860. Population, 1900, 9,098; in 1920, 15,873.

CHAMP DE MARS (shȧn′de-märs), meaning Field of Mars, a celebrated square in Paris, France, where the feast of the revolution was held on July 14, 1790, and Louis XVI. swore to defend the new constitution. Besides being a seat of many noted feasts and demonstrations, it was the site of the great expositions of 1867, 1878, 1889, and 1900.

CHAMPLAIN (shăm-plān′), a beautiful lake located between New York and Vermont and extending into Canada. Its greatest breadth is about fifteen miles; length, 110 miles; and area, 600 square miles. It is connected with the Hudson River by a canal. The discharge is carried by the Richelieu River, which flows into the Saint Lawrence. A large number of small islands are located in the lake, some of which are highly productive, and its beautiful scenery attracts many visitors. The name was given to it from its discoverer, Samuel de Champlain. It was the scene of an important battle between the Americans and British in 1814, when the latter were defeated.

CHAMPLAIN, Samuel de, eminent navigator, born at Brouage, France, in 1567; died in Canada, Dec. 25, 1635. In 1595 he distinguished himself in the maritime war against Spain and attracted the attention of Henry IV., who commissioned him in 1603 to found settlements in North America. Previously, in 1599, he had made a voyage to the West Indies and returned to France by the way of the Isthmus of Panama. On his first two voyages to Canada, in 1603-04, he sailed up the Saint Lawrence River, and later explored and mapped the coast as far as Cape Cod. He founded Quebec in 1608. The next year he fought against the Iroquois, and was governor of Canada from 1612 to 1629. In the latter year he was defeated by the British and carried captive to England. He was restored to liberty in 1632 and returned to Canada the following year. Among the early ex-



SAMUEL DE CHAMPLAIN.

plorers and pioneers he ranks as one of the most successful and considerate.

CHAMPOLLION (shăm-pŏl'ē-ŏn), **Jean François,** scientist and traveler, born at Figeac, France, Dec. 23, 1790; died March 4, 1832. He made a specialty of studying languages at Paris and in 1816 was made professor of history at the lyceum of Grenoble. He traveled extensively in Egypt, where he studied the symbols and hieroglyphics by means of the Rosetta stone, from which he obtained a key to the mysteries of the inscriptions. In 1830 he was admitted to the French Institute and two years later was made professor of Egyptology at the College of France. He published "Egyptian Dictionary," "Geographical Description of Egypt Under the Pharaohs," and "Monuments of Egypt and Nubia Considered in Relation to History."

CHAMPS ELYSÉES (shän-zȧ lē-zā'), a fashionable promenade established at Paris, France, in 1616, when it was platted by Marie de Medicis. It extends from the Arc de l'Etoile to the Place de la Concorde, a distance of one and one-third miles. At the lower end are many cafés and restaurants. Those who visit Paris find the promenade one of the finest sights, especially in the afternoon, when many carriages and pedestrians are on the Champs Elysées.

CHANCELLOR (chȧn'sĕl-lẽr), an officer who presides over a court of chancery, similar to the judges of a court of law. He is usually selected from among judges by other judges, to sit as a chancellor. In a university the chancellor is the chief officer of the institution, but generally an honorary officer. In Great Britain the lord high chancellor is a state officer of large functions. His office is one of the highest civil positions in the land and when raised to the peerage he takes precedence immediately after the Archbishop of Canterbury. He is an important official of state, acts for both England and Scotland, and in some respects for the United Kingdom. The chancellor is the chairman or speaker of the House of Lords.

CHANCELLORSVILLE, a village in Spottsylvania County, Virginia, about sixty-five miles northwest of Richmond. It was the scene of a number of battles fought on May 2-4, 1863, between the Union and Confederate armies. General Hooker commanded the army of the Potomac and the Confederates were commanded by General Lee. The Union army numbered 100,000, while the Confederates consisted of 90,000 men. In the terrible conflict of three days the Union army was defeated with a loss of 18,000 men, while the Confederates lost 13,000, including their able and brave general, Stonewall Jackson, who fell mortally wounded and died about a week later. This loss was irreparable.

CHANDLER (chănd'lẽr), **Charles Frederick,** chemist, born in Lancaster, Mass., Dec. 6, 1836. After studying at Harvard University, he took extensive courses at Göttingen and Berlin, and in 1857 became director of chemistry at Union College, Schenectady, New York. In 1858 he was made professor of chemistry in the New York College of Pharmacy, and six years later secured the position of professor of analytical and applied chemistry in Columbia University, where he remained until 1876, when he was made professor of chemical and medical jurisprudence in the College of Physicians and Surgeons. Subsequently he held other important positions and was an officer in many American and foreign societies. Among his numerous writings are "The Chemistry of Gas-Lighting," "Synopsis of Organic Chemistry," "Dangerous Kerosene," "Report on Waters for Locomotives and Boiler Incrustations," and "Manual of Quantitive Analysis." He died Aug. 25, 1925.

CHANDLER, William Eton, statesman, born in Concord, N. H., Dec. 28, 1835. He was educated at the Harvard Law School, from which he graduated in 1855, and seven years later was elected to the New Hampshire House of Representatives. Subsequently he was reëlected, serving as speaker in 1863-64. He was first assistant secretary of the treasury, held several offices under the United States, and served as secretary of the Republican national committee from 1868 to 1876. He was nominated for solicitor-general of the United States in 1885, but the Senate refused to confirm the appointment. From 1882 to 1885 he held the office of Secretary of the Navy, and in 1887 was elected to fill a vacancy in the United States Senate. He was twice reëlected, in 1889 and 1895. He died Nov. 30, 1917.

CHANDLER, Zachariah, statesman, born in New Bedford, N. H., Dec. 10, 1813; died in Chicago, Nov. 1, 1879. He received a common school education, engaged in the dry goods business in Detroit, and became an active supporter of the Whig party. In 1851 he was elected mayor of Detroit, and in 1857 succeeded Gen. Lewis Cass in the United States Senate, which office he held until his death, except only in 1875-79. When the Republican party was organized, he was an advocate of its doctrines, opposed the admission of Kansas under the Lecompton constitution, favored war in defense of the Union, and advocated confiscation of the property of those who took up arms against the government. He was Secretary of the Interior under General Grant, beginning in 1875, which office he held until the inauguration of President Hayes.

CHANG-CHOU (chăng'chou), a city in the province of Fu-Kien, China. It is located in the valley of the Chang River. The city is surrounded by a wall about five miles in circumference and is ancient and uncouth. In it are several Buddhist temples, among them a magnificent structure erected in the 8th century. The industries include manufactures of utensils, sugar, porcelain, opium, and paper and silk goods, and a large export and import trade. Its location on a navigable river only twenty-five miles from the sea renders it an important commercial center. Population, 900,190.

CHANNEL ISLANDS, a small group of islands in the English Channel, off the coast of France. The area is 108 square miles. The most important islands of the group include Sark, Alderney, Guernsey, and Jersey, the last three giving the names to the celebrated milch cows exported from them. Much of the surface is productive and well cultivated. The principal industries are agriculture and dairying. The language spoken is Norman-French, the official language is French, and the government is under the British. These islands became a possession of Britain at the time William the Conqueror made his famous invasion. A number of strong fortifications still indicate the English possession of Norman provinces, of which they are the only remains. Population, 1922, 95,974.

CHANNING (chăn'nĭng), **William Ellery,** minister and writer, born at Newport, R. I., April 7, 1780; died in Bennington, Vt., Oct. 2, 1842. He was educated at Harvard University, where he secured a degree in 1798, and was ordained as minister of a Congregational church in Boston in 1803. His sermons were distinguished for their fervor, devoutness, and solemnity. His reputation hinges, not only on his fearless exposition of the Bible, but also on reviews, writings, and discourses on popular subjects. He championed the abolition of slavery, favored advanced theories of education and temperance, and allied himself with the Unitarian Church. Among his best known writings are "On the Character and Writings of John Milton," "Essays on National Literature," "Self-Culture," "Negro Slavery," and "The Character of Fénelon."

CHANTILLY (shän-tē-yē'), a town of France, in the department of Oise, twenty-four miles northeast of Paris. It is a picturesque place and is noted for its manufacture of fine lace and porcelain. Several parks are maintained, one of which belonged to the Condé family from 1632 until 1830. The remains of Coligny were interred in the parish church of Chantilly, after his head had been cut off and sent to Catherine de' Medici. In one of the châteaus is a splendid art collection, which was presented by the Duc d'Aumale to the Institute of France in 1887. Population, 1922, 4,750.

CHANTILLY (shăn-tĭl'lĭ), a village of Virginia, in Fairfax County, twenty miles west of Washington, D. C. It was the scene of an indecisive battle of the Civil War on Sept. 1, 1862, when the Federals under Generals Hooker and Kearny made an attack upon the Confederates under General Jackson. Both sides lost heavily and Generals Philip Kearny and Isaac J. Stevens were among the Federal dead.

CHANTREY (chăn'trĭ), **Sir Francis,** sculptor, born near Sheffield, England, April 7, 1781; died Nov. 25, 1841. He studied carving in Sheffield and later gave attention to modeling in clay. For some time he studied art at the Royal Academy and settled in London. In 1817 he was made a member of the Royal Academy, and soon acquired a reputation for making busts and producing monumental sculptures. Among his bronze statues are those of Channing and William Pitt. His statue in marble of Washington is in the State house at Boston. In the Litchfield Cathedral is one of his most noted groups, entitled "The Sleeping Children."

CHANUTE (chȧ-nōōt'), a city of Kansas, in Neosho County, 125 miles southwest of Kansas City, Mo., on the Kansas City Southern and the Atchison, Topeka and Santa Fé railroads. It is surrounded by a country that produces gas and oil. Among the public utilities are waterworks, street pavements, a public library, and several fine schools. It has manufactures of machinery, clothing, and ironware. The first settlement was made in 1872 and it was incorporated the following year. Its rapid growth and prosperity is due to its convenient location on important railways and within a productive field of oil and natural gas. Population, 1904, 10,116; in 1925, 9,829.

CHAOS (kā'ŏs), the void existing before the creation, or the mass of matter existing in confusion before the elements were arranged according to class, kind, and form by creation. The term is also used to express any condition of being in which the elements or parts are in utter disorder or confusion.

CHAPALA (chȧ-pä'lȧ), a beautiful lake located in Mexico, in the states of Jalisco and Michoacán, and forming part of their boundary. The lake has excellent fisheries. Near it is the railroad city of Ocotlan. The area of the lake is 1,390 square miles. It receives the inflow from the Rio Lerma and the discharge is carried by the Rio Santiago, which issues from the north side.

CHAPERON (shăp'ẽr-ōn), a cap or hood worn by knights. The name is also applied to a device placed on the foreheads of horses drawing a hearse, especially at stately and pompous funerals.

CHAPLEAU (sha-plo'), **Sir Joseph Adolphe,** statesman, born at Sainte Therèse-de-Blainville, Quebec, Nov. 9, 1840; died in 1898. He studied at the colleges in Terrebonne and Saint Hyacinthe, and in 1861 was admitted to the bar. In 1867 he was elected to the Legislature, became queen's counsel in 1873, and was made Secretary of State for Canada in 1882. He filled the last-mentioned office successfully until 1892, when he was made Minister of Customs, and subsequently was appointed Lieutenant-Governor of Quebec. He was a Conservative in politics and took rank as an orator among the French Canadians.

CHAPLAIN (chăp'lĭn), a name originally applied to a spiritual adviser of a regiment of soldiers, but now used to signify the spiritual adviser of any organization or collection of persons. Such an officer is employed by legislative bodies, naval organizations, and military institutions, while many noblemen and sovereigns also engage them. In the prisons the chaplain ministers to the comfort and need of the inmates. The chaplain of the United States army usually holds the rank of captain. He ranks from lieutenant up to captain in the navy, depending upon time of service.

CHAPLIN, Charles Spencer, comedian, born near London, England, in 1888. At the age of seven years he became identified with theatrical work, chiefly in juvenile plays, and after 1914 engaged largely in moving picture exhibits. Subsequently he enjoyed the distinction of being a star actor and became known throughout the civilized world, especially in comic adventures.

CHAPMAN (chăp'man), **George,** poet and translator, born at Hitchin Hill, England, in 1557; died May 12, 1634. He studied at Trinity College, Oxford, where he became distinguished for his knowledge of the classics, and in 1576 settled in London. His personal friends included Jonson, Spenser, Marlowe, and Shakespeare.

CHAPULTEPEC (chȧ-pōōl-tā-pĕk'), a fortress two miles southwest of the city of Mexico, located on a rock formation 150 feet high, and crowned by a castle erected in 1785 by the Spaniards. It was the scene of the decisive battle in the Mexican War. General Scott first stormed Molino del Rey on Sept. 8, 1847, and engaged the attention of the Mexicans by heavy fire from the batteries at the south end of the city. On Sept. 13, under the cover of guns, picked men forming two columns assaulted and captured the fortress. The Americans lost less than 900 killed and wounded. The fall of Chapultepec opened the causeway to the capital of the republic and compelled the Mexicans to terminate the war. Since then the castle has been transformed into a beautiful summer residence for the President of Mexico, while adjoining it is the Mexican military school, often called the West Point of Mexico.

CHARADE (shȧ-räd'), a kind of enigma, which consists in dividing a word into syllables, each of which must be a complete word and vaguely define without naming each of the parts and the whole word. For a charade to have literary worth its members must have some relation to each other, and unite in an epigrammatic point. It was invented in the latter part of the 18th century and had been used most extensively in Germany and France. In some countries the charade forms a kind of parlor drama, in which each syllable is introduced prominently in the successive scenes, and the whole word is brought out in the last act.

CHARCOAL (chär'kōl), a pure variety of carbon prepared from bones or vegetable substances. Other sources of charcoal are coke, ivory, and various semiorganic substances. Charcoal made of bones is used in refining sugar and as a medium to filter and disinfect. It is prepared by calcining bones in closed vessels, which are in the form of earthen pots, and are filled with bones and highly heated, or are made of retorts and treated much like those used in distilling coal for the production of illuminating gas. It requires about sixteen hours of firing to complete the charring of fifty pounds of bones to a pot. After calcining, the bones are ground between rollers to form granulated material serving to charge the filters of the sugar refiner. *Bone charcoal* is particularly valuable for removing color and impurities from sugar. *Wood charcoal* is made by burning wood with but little access of air. Before burning, the wood is piled in a heap and covered with sand or earth. The fire is applied at an opening near the bottom of the pile, and small openings are constructed above for the escape of the gases. Since wood consists of carbon, hydrogen, and oxygen, the carbon remains to form the charcoal, while the hydrogen and oxygen gases escape. In making a fine grade of charcoal, useful in the manufacture of gunpowder, such woods as the willow are used, and the burning is done in iron cylinders or retorts, in which the hydro-carbons and acids are removed by a process of distillation. In this way the process can be accurately regulated, and the products are increased correspondingly in value. The many useful purposes to which wood charcoal is put include its employment as an essential element in the manufacture of gunpowder, fireworks, galvanic batteries, and electric lamps. It is valuable as a fuel, a polishing powder, a means to remove color and unwholesome smells from solutions and water, an absorbent of gases and vapors, and a nonconductor in safes, refrigerators, and ice houses. The best grades of charcoal contain from sixty-five to ninety-six per cent. of carbon. Charcoal consisting of lampblack, ivory black, and kindred substances is used as the basis of black paint, and is of value as a constituent of printing ink when mixed with resinous matter and oils. Other uses of the several varieties are for medicine and in the toilet for tooth powder.

CHARCOT (shär-kō'), **Jean Martin,** physician, born in Paris, France, Nov. 25, 1825; died Aug. 18, 1893. He received a doctor's degree in 1853, and three years later was appointed a hospital physician in Paris. In 1873 he became a member of the Academy of Medicine, and for many years held a professorship of diseases of the nervous system. He discovered a number of original methods in treating nervous diseases and became prominent through his experiments in hypnotism and mental suggestions. Besides contributing to periodical literature, he published many volumes relating to diseases of the nerves.

CHARENTE (shä-ränt'), a river in the western part of France, rises about fourteen miles northwest of Châlus, and after a course of 220 miles discharges into the Bay of Biscay, opposite the Aix and Oléron islands. It is navigable to Angoulême, a distance of 104 miles, but steamboats do not ascend farther than Saintes, which is at the head of tidewater.

CHARIOT (chăr'ĭ-ŏt), a vehicle used for pleasure and war by the early Assyrians, Egyptians, Greeks, Romans, and other ancient peoples, but now used principally in exhibitions. It has two wheels and is closed in front and open behind, and those used by ancient warriors had quivers to contain the arrows attached to the side. Three men—the *warrior,* the *shield-bearer,* and the *charioteer*—were necessary to fully equip the vehicle of war. In the ancient chariot races two or four horses were commonly used, while in war two horses generally served the purpose of drawing this vehicle. The chariots employed by the Romans in the campaigns in Germanic countries and Gaul were provided with a scythelike implement, hooks, and other offensive weapons. They were attached to each extremity of the axle, on the outside of the wheels. The sculptures of ancient Assyria give definite ideas of the construction of the vehicles that were peculiar to their time.

CHARITY, Sisters of, a sisterhood of the Roman Catholic Church, founded by Saint Vincent de Paul at Paris in 1629. The primary object of this organization at the time it was instituted was to nurse patients in hospitals, but the care of poor children, free schools, almshouses, and hospitals were soon placed under their management. Branch organizations are now maintained in all countries where the Catholic Church is represented, the total being about 40,000. Besides these are the Sisters of Charity organized at Dublin, Ireland, in 1815, and the Sisters of Charity of Saint Paul, instituted by a French curé in 1704. The vows of the members in the last two are perpetual, while in the former they renew their vows annually. The work of these helpful organizations consists largely of giving instruction to the children of the poor and in parochial schools.

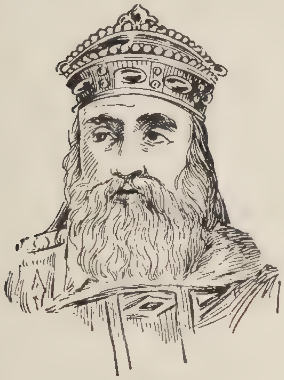
CHARITY ORGANIZATIONS, the name applied to associations having for their object the improvement of morals and the conditions of human life. In some countries they are known as *United Charities* or *Bureau of Charities.* The first society of this kind had its beginning in London in 1869, and its plan was copied in 1873, when a similar society was formed at Germantown, Pa. The Buffalo Charity Organization Society was founded in 1877, and since then many similar societies have been formed. In 1923 there were 261 cities in the United States that had societies of this kind. In the same year ten cities of Canada had organizations of this kind, and similar societies were maintained in Australia and most countries of Europe.

The general object of charity organizations may be said to be the cure of social evils as well as the alleviation of distress suffered by the poor and unfortunate. Where those in poverty are absolutely in need of alms it is customary to give relief, but as a general rule the practice is to train people to help themselves. In many cases trained workers of the local association visit the homes of improvident families with the object of helping them to help themselves, or rather to put them on a footing where they will be able to live under improved conditions and become competent to sustain themselves by following some useful occupation.

Much good has been done by studying sanitation with the view of inducing cleanliness and supplying the needy with pure water and good ventilation. In this connection the tenement houses have been improved, especially in the congested districts of large cities. The Charity Organization Societies of New York City, after taking steps to improve housing by advocating restrictive legislation and sanitary inspection, effectually turned attention to the project of stimulating a higher conception of life by means of general education. Recently the Chicago Bureau of Charity carefully investigated the treatment of youthful offenders and worked out a plan to rescue children under arrest for crime. This movement caused the establishment of the Chicago Juvenile Court, which was organized under a law that went into effect in 1901, and it has jurisdiction of cases in which children under ten years of age are arrested for begging, singing, selling articles, or playing musical instruments on the streets. Under this plan of treating youthful vagrants, or semicriminals, it has been possible to not only reduce the number of misdemeanors committed by neglected children, but also to rescue juveniles and bring about permanent reform. Similar provisions are now enforced in Baltimore, Minneapolis, New York, Philadelphia, and other American cities. In order to prevent a tendency to crime, or reform those who have erred, it is the general rule to deal with the head of the family. Mothers' meetings, home libraries, penny saving banks, and local organizations have proven wholesome means to carry on charity work.

CHARIVARI (shȧ-rē-vȧ-rē'), a serenade given by a company who make discordant music at marriages as a token of good feeling or for merriment. In some countries the practice is perpetrated as a mark of disregard. In France the name has been applied to several comic journals, as the Paris *Charivari.*

CHARLEMAGNE (shär'lẽ-mān), meaning Charles the Great, King of the Franks and



CHARLEMAGNE.

Romans, born at Aix-la-Chapelle, Germany, April 2, 742; where he died Jan. 28, 814. He was the son of Pepin the Short, grandson of Charles Martel, and the most distinguished representative of the Carlovingian dynasty (q. v.). He succeeded his father jointly with his brother Carloman in 768. At the death of his brother in 771, and with the vote of the Franks, he became sole king. In his reign of forty-six years he undertook fifty-two campaigns, and conducted wars and gained conquests of wonderful magnitude; the warfare was directed principally against the Lombards, Saxons, and Saracens. He married the daughter of Desiderius, King of the Lombards, but sent her back to her father's house and married Hildegarde, daughter of the Swabian Duke Godfrey. This induced Desiderius to promote the succession for the children of Carloman, which caused Charlemagne to seize all his possessions and imprison him in a monastery. In 774 he placed on his own head the famous "iron crown of Lombardy." He invaded Spain in 778, conquered the Moors, and added the region south of the Pyrenees to his kingdom, but on his return the rear of his army was attacked by the mountaineers of that region, the Basques and Gascons, who cut it to pieces and caused the fall of the famous Christian knight Roland. He next moved against the Saxons, then a pagan tribe of Germany, and sought to establish Christianity among them, but was resisted with much vigor for more than thirty years, though they finally yielded.

Charlemagne proceeded to Rome in the year 800, and, as an ally of the Pope, fought against the rebellious Romans, whom he punished, and was rewarded richly for his services. While worshiping on Christmas day in Saint Peter's Church, the Pope proclaimed him emperor of the Romans and the successor of Caesar Augustus and Constantine, he himself placing the crown upon his head. The imperial seat of the Roman empire had been at Constantinople since 476, but it was now removed to his own capital, Aix-la-Chapelle. His dominion extended from the Mediterranean to the Baltic, from the Danube to the Atlantic Ocean, including modern Hungary, Belgium, Germany, France, Switzerland, and portions of Italy and Spain. It was a possession so vast that only a Charlemagne could be its successful ruler. Soon after his death the Northmen harassed it and internal dissensions threatened to disrupt the hitherto powerful state. In 843 it was finally divided by the Treaty of Verdun among his three grandsons, Lothaire, Charles, and Louis, this division constituting at least a partial foundation for the modern nations of Italy, France, and Germany, respectively.

Charlemagne was not only a statesman and warrior, but holds a high place as a friend of learning and industry. He encouraged agriculture by teaching that art to the farmers, improved the culture of fruit by naturalization and grafting, and gave liberal support to the fine arts. Schools were established for the education of his servants' sons as well as for the culture of the people in all his vast domain. His "Capitularies," including important laws, more than a thousand in number, were an instrumentality for the general good, portions of which are still preserved. They protected commerce against robbers, provided for the general welfare, and sanctioned many progressive industries. He was a man of large stature, and bore a noble and commanding appearance. He was married four times and left one son, surnamed *Debonnaire,* who became Louis I. Charlemagne is enumerated as Charles I. among both the German and French kings. His favorite residence was at Aix-la-Chapelle, where he was buried.

CHARLEROI (shär-le-roi'), a borough of Pennsylvania, in Washington County, 40 miles south of Pittsburg. It is located on the Monongahela River and on the Pennsylvania Railroad, and is a thriving manufacturing and commercial center. Among the manufactures are glass, utensils, and machinery. The principal buildings include several fine schools and churches. The first settlement on its site was made in 1890, and its prosperity is due to its extensive manufacturing enterprises. Population, 1900, 5,930; in 1920, 11,516.

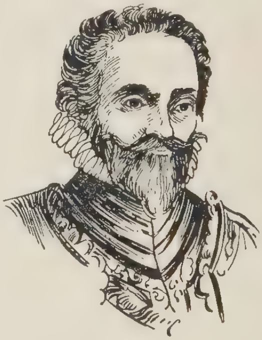
CHARLES, a name borne by many European monarchs. Among those worthy of mention and not mentioned in the articles following are emperors of Germany: Charles IV. (1316-1378), and Charles VII. (1697-1745). Kings of France: Charles the Bald (823-877); Charles the Fat (839-888); Charles the Simple (879-929); Charles the Handsome (1294-1328); and Charles the Wise (1337-1380). Charles is the name of the present reigning monarchs of Würtemburg and Rumania.

CHARLES I., King of Rumania, born April 20, 1839. His father, Prince Karl Anton of Hohenzollern-Sigmaringen, gave him a liberal education, and he served a number of years in the army of Russia. In 1866 he was elected prince of Rumania, succeeding the dethronement of Alexander John, and by energetic measures he placed the country on a sound financial basis. In the war between Russia and Turkey, in 1877, Rumania was an ally of Russia, and Prince Charles took personal command and rendered valuable services during the attack on

Plevna. Rumania declared its independence shortly after the beginning of the war, and in 1881 Charles was crowned as king at Bucharest. In 1869 he married Princess Elizabeth von Wied, better known as Carmen Sylvia. Under his administration education advanced and financial conditions were improved. He died at Sinaia, Wallachia, Oct. 10, 1914.

CHARLES I., King of England, born Nov. 19, 1600; beheaded Jan. 30, 1649. He was born at Dunfermline, Scotland, and in early childhood was infirm, learning to speak in his fifth year and to walk in his seventh. Later he acquired activity, engaged in manual exercises, and became a devoted scholar. He married the daughter of Henry IV. of France, Henrietta Maria, in 1625, and the same year succeeded his father on the throne. He undertook to reign under a system of pure absolutism, dissolved three Parliaments, and for eleven years used the arbitrary courts of High Commission and Star Chamber. His attempt to supplant the Scottish Church by establishing the Anglican caused violent riots and gave rise to the *Covenant* in 1638, by which the designs of the king were opposed. He sent an army to the north for the purpose of bringing the Covenanters to terms, but met with defeat, and in 1640 two parliaments were summoned. The first Parliament, known as the *Short Parliament,* was dissolved in three weeks, and the second, the *Long Parliament,* remained in session longer than the reign of Charles I. In the great controversy the king was favored by the gentry, but the larger commercial cities and nearly all the Puritans sided with the Parliament. In 1642 the Civil War began. The first battle, occurring on Oct. 23, gave the king some advantages; but in the Battle of Marston Moor, in 1644, a decisive stroke was made by Cromwell, who utterly routed the royalists. The following year the king's cause was entirely lost by the Battle of Naseby, and Charles surrendered at Newark to the Scottish army on May 5, 1646. He was tried and condemned to death, and was beheaded before the Banquet House, in Whitehall, where he met his death with composure and dignity. In private life he was a man of irreproachable character and possessed a cultivated mind, but in political affairs he was unscrupulous.

CHARLES II., King of England, eldest son of Charles I., born May 29, 1630; died Feb. 6, 1685. In 1646, after the political complications in England between his father and Parliament, he escaped to France. The Scots proclaimed him king in July, 1650, and crowned him at Scone in 1651. Cromwell at once proceeded against him and his army made up of English royalists. A battle ensued at Worcester, and, after a total defeat, he again escaped to France. After the death of Cromwell, Gen. Monk effected the restoration of the house of Stuart, and he landed at Dover May 26, 1660, where he was received amid rejoicing by the people. He surrounded himself with men of extreme party prejudices, brought to the scaffold those directly concerned in the death of his father, and ruled with much severity. He encouraged religious persecution and was personally extravagant. For the sake of a dowry, he married Catharine of Braganza, Infanta of Portugal, sold Dunkirk and Mardyke to France, and otherwise displeased his country by war and indiscretions. Among the noted events of his reign are extended internal religious troubles, two wars with Holland, civil struggles to prevent his brother James, Duke of York, from being declared heir to the throne, and conspiracies known as the Popish and Rye-House plots, in which his life was sought. The great fire of London, consuming 13,225 houses, and the plague, taking 70,000 lives, are events that occurred in his reign. His life was dissolute and characterized by extravagance, and his reign ranks as the most unsuccessful in English history.


CHARLES V.

CHARLES V., Emperor of Germany, Charles I. of Spain, born at Ghent, Feb. 24, 1500; died in Spain, Sept. 21, 1558. He inherited the low countries from his father, and Spain, Naples, and the Spanish colonies in America from his mother, and, on the death of Maximilian in 1519, was elected German emperor over a number of competitors. He was crowned at Aix-la-Chapelle in 1520, and in addition received the title of Holy Roman Emperor from the Pope. When ascending the imperial throne, Germany was greatly agitated by the doctrines proclaimed by Luther, and, to restore peace, a general diet was held at Worms in 1521, at which Luther declared the principles which were germane in the history of the Reformation. He reduced the towns of Castile to subjection in 1522, and likewise waged successful wars against the Turks under Solyman the Great. Next he proceeded against Francis I. of France, drove his armies from Italy, and made the French king his prisoner. Alarmed at his victories, the Pope allied himself with France to release the king and free himself from obligations under which he was placed by Charles. The latter promptly sent his army against Rome, captured it by storm, and made the Pope prisoner, holding him captive seven months. In 1529 he concluded terms of peace quite favorable to himself.

Charles V. designed to proceed against the Turks, who had overrun Hungary, and adjust religious difficulties in Germany, but in the latter he was disappointed by the Diet at Augsburg in 1530, and, failing to support the Protestants, they refused to help him against the Turks. Later he yielded to some of the demands of the Protestants, led a successful expedition against the pirate Barbarossa in Tunis, and entered upon a war against France. The war terminated in his favor in 1542. Five years later he defeated the Protestant princes at Mühlberg, but was subsequently compelled to flee before the arms of Duke Maurice of Saxony and the Protestants. In 1552 he granted religious liberty, which was confirmed by the Diet of Augsburg in 1555. Later he lost part of Lorraine by the advance of Henry II. of France, and, failing in health, he abdicated the same year. The remaining three years of his life were spent in a Spanish monastery in mechanical amusements and religious exercises. As King of Spain he was succeeded by his son, Philip II., and his brother Ferdinand succeeded him in the German Empire.

CHARLES VI., Emperor of Germany, born Oct. 1, 1685; died Oct. 20, 1740. He was the second son of Emperor Leopold I. and the only male representative of the house of Hapsburg. He was intended by his father for the throne of Spain, but Charles II. of Spain assigned it to Philip of Anjou by testament, which resulted in a prolonged war, but he was finally acknowledged Charles III. of Spain. In 1711 he was recalled to Germany by the death of his brother, Emperor Joseph I., becoming Emperor of Germany, and the allied powers in 1713 concluded the Peace of Utrecht with France. He gave up Spain, but held the Spanish possessions in the Netherlands and in Italy. He was successful in the war against the Turks and later in a war against Spain, and formed the Quadruple Alliance with Holland, France, and Britain against the Spanish. After the loss of his only son, he named Maria Theresa as his heiress, but was obliged to surrender some territory in order to establish her claim, and still later lost territory in a war with the Turks. He had a benevolent disposition, but showed weakness on account of deep prejudices in favor of the ecclesiastical domination.

CHARLES VI., King of France, born in Paris, Dec. 3, 1368; died Oct. 22, 1422. He was a son of Charles V., whom he succeeded in 1380, at the age of twelve years, and was the first prince to receive the title of *dauphin*. His uncles, Burgundy and Bourbon, exercised a wide influence during his minority, and when he took the government in his own hands he found the country much disturbed by political factions. He ruled wisely from 1388 until 1392, but in the latter year became insane, and the country was again distracted by civil war. France was invaded at this time by Henry V. of England, who won a great victory at Agincourt, in 1415, and set up a claim to the throne of France. Most of France was in the hands of the English at the death of Charles VI. He is known in history as Charles the Silly.

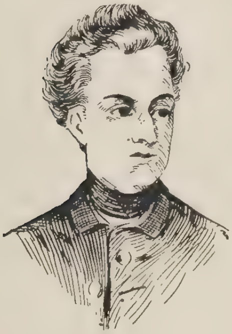
CHARLES VII., King of France, son and successor of Charles VI., born Feb. 22, 1403; died July 23, 1461. He was at the head of the army at the time his father died, and a large part of France was occupied by the English, who had declared Henry VI. of England the King of France. He was unsuccessful in Champagne, in 1424, and in Maine, in 1425, but gained a victory at Montargis. The English laid siege to Orleans, but the rise of Joan of Arc, the Maid of Orleans, inspired the people and nobles to such patriotism that the siege was raised and the English lost all their advantages in France. Charles entered Paris in 1436 and devoted himself to a reorganization of the government and to a general furtherance of internal improvements.

CHARLES VIII., King of France, born at Amboise, July 30, 1470; died here April 7, 1498. He was a son of Louis XI., whom he succeeded in 1483, at the age of thirteen years. He began to reign under the regency of his sister, Anne of Beaujeu, but assumed the government in 1490, and soon became involved in a war with Spain and England. The disagreement was caused by his marriage to Anne, Duchess of Brittany, who was betrothed to Emperor Maximilian of Austria, and peace was concluded by ceding Artois and Franche-Comté to Austria and Cerdagne and Roussillon to Spain, and paying a handsome sum to England. In 1494 he invaded Italy and conquered most of that kingdom, but an alliance was formed against him by Spain and Germany, and he defeated the allies at Fornova and withdrew from the country. He died without issue and was succeeded by Louis XII.

CHARLES IX., King of France, born June 27, 1550; died May 30, 1574. He was the second son of Henry II. and Catharine de Medici, and succeeded his brother Francis II. to the throne in 1560. He was a heartless and wavering ruler, and an easy victim to the cruelty and dictations of his mother. His reign was made infamous by the massacre of Saint Bartholomew, Aug. 24, 1572, and was greatly disturbed by political dissatisfaction and war.

CHARLES X., King of France, born at Versailles, Oct. 9, 1757; died in Görz, Austria, Nov. 6, 1836. He was the third son of the Dauphin Louis and grandson of Louis XV., received the title Count d'Artois, and married Maria Theresa of Savoy in 1773. He took the lead in the emigration from France after the fall of the Bastille in 1789. 1796 he set sail from England with the object of restoring the monarchy, but this early attempt did not succeed. When the allies entered Paris in 1814, he appeared as lieutenant general of the kingdom under Louis XVIII. At the death of that monarch, in 1824, he ascended the throne, swearing adherence to the charter, but soon displayed his intention to restore absolutism. He dissolved the chambers in 1830 on account of a disagreement with the deputies, and later suppressed the freedom of the press, abridged the elections, and dissolved the new chambers. These measures resulted in a revolution, which succeeded in the brief period of three days in driving him from the capital and declaring Louis Philippe, Duke of Orleans, King of France. Charles spent the remainder of his life in exile and took no part in the political intrigues of his adherents in France.

CHARLES XII., King of Sweden, son of Charles IX., born June 27, 1682; killed in the siege of Frederikshald, Norway, Dec. 11, 1718. He succeeded his father to the Swedish throne at the age of fifteen years. Sweden was then the most powerful nation of the north, and Denmark, Poland, and Russia immediately decided to humble its power. The young king at once appeared before Copenhagen and required the Danes to treat for peace. He next hastened to meet the Russians, and attacked their force of 50,000 men at Narva with his army of 8,500, routing them with great loss. Proceeding to Poland, he dethroned Augustus II., secured liberty of conscience in Silesia, and led an army of 43,000 to attack the Russians at Moscow, but was met at Pultowa and defeated, securing safety by fleeing to Turkey. Russia and Denmark now assailed the Swedish territory, but the local regency in Stockholm succeeded in offering successful resistance, while the Turks declared war against Russia as a result of a request made by Charles. However, he was forsaken by the Turks and taken prisoner by Russian agents, but escaped to Sweden by way of Hungary and Germany. He next undertook to conquer Norway, and later designed to replace the house of Stuart in England, but at the siege of Frederikshald was killed by a musket bullet. He ranked as a man of fearless courage and great daring. Sweden, however, was so exhausted by his wars that it ceased to be numbered among the great powers with the close of his reign.


CHARLES XII.

CHARLES XIV., King of Sweden. See **Bernadotte.**

CHARLES EDWARD, son of James Stuart, the first pretender, born at Rome, Dec. 31. 1720; died Jan. 31, 1788. He is known as the *Young Pretender* to the throne of England. His education was secured at Rome, where he showed much talent in learning, and became noted for firmness and perseverance. In early life he joined the Spanish army to contest against Austria, and later secured a fleet and army from France to invade England with the intention of securing the throne for the Stuarts, but failed in his campaign by reason of severe storms. Being disappointed, and France refusing to furnish further equipments, he collected funds, constructed two small vessels, and set sail for Scotland. One of his vessels was lost, but he landed with the other and gathered an army of Scotch Highlanders. He succeeded in defeating the English army at Prestonpans on Sept. 22, 1745, and marched through England, but failed to capture London. He never bore the title of king, and died at Rome in remorse and disappointment.

CHARLES MARTEL, namely, Charles the Hammer, celebrated leader of the Franks, born about 690. He was the most powerful man in France at the time Chilpéric was king, and bore the title of mayor of the palace under the Merovingian dynasty. The responsibility of the government rested more on his hands than on those of the king, and he is often spoken of as the chief ruler. The Saracens invaded France, but were met by Charles in battle between Tours and Poitiers in 732 and totally defeated. This battle ranks as one of importance, for the reason that it saved Western Europe from the Turks. Besides, he carried on successful wars against the Allemanni, Saxons, and Bavarians. His death occurred in 741, and he was succeeded by his son Pepin, who was the first representative of the Carlovingian family on the throne of France.

CHARLES CITY, a city of Iowa, county seat of Floyd County, on the Cedar River, 140 miles northwest of Dubuque. It is on the Illinois Central and the Chicago, Milwaukee and Saint Paul railroads, and the surrounding country is fertile, producing cereals and live stock. The Cedar River furnishes good water power. Population, 1905, 4,546; 1925, 6,425.

CHARLES I., Emperor of Austria and King Charles IV. of Hungary, born Aug. 17, 1887. He succeeded his great-uncle, Francis Joseph, in 1916, owing to the assassination of his uncle, Archduke Francis Ferdinand. In 1911 he married Princess Zita of Parma. He commanded in the campaign against Italy, taking part in the defense of the border. and in 1917 personally accompanied the invasion of Venetia. He abdicated in 1918, following the defeat of his armies, and died at Funchal, Madeira, April 1, 1922.

CHARLES RIVER, a river in the eastern part of Massachusetts, rises in Norfolk County and flows into Boston Harbor. It separates Charlestown from Boston, and on its banks are Cambridge, Watertown, Waltham, and Newtons. Tidewater extends to Watertown and Boston is an estuary.

CHARLES THE BOLD, Duke of Burgundy, born Nov. 10, 1433; slain Jan. 5, 1477. He was the son of Philip the Good, whom he succeeded as duke in 1467. His training inspired him to become the devoted enemy of Louis XI. of France, then nominally superior of Burgundy. He formed an alliance with several princes, threatened Paris, and defeated the king at Montlhéry. Possessing much wealth and more power than any prince, he conceived the plan of restoring the kingdom of Burgundy, for which purpose he was intent on conquering Switzerland, Provence, Lorraine, and Dauphiny. With this end in view he engaged in a number of wars with Louis XI., and in 1476 invaded Switzerland, but was defeated. Three months later he again invaded Switzerland with an army of 60,000 men, but was again defeated. After these defeats he gave up his former object. When the Duke of Lorraine was attempting to regain his former territories, Charles met him in battle and was slain. His daughter and heiress, Maria, was married to Emperor Maximilian I. With his life successful resistance to the French central power ended, and the monarchy of France was established soon after.

CHARLESTON (chärlz'tŭn), a city of Illinois, county seat of Coles County, forty-seven miles west of Terre Haute, Ind., on the Big Four and the Nickel Plate railways. The surrounding country is fertile and is devoted to farming and stock raising. It has an important trade in merchandise and manufactures of shoes, brooms, woolen goods, and hardware. The chief buildings include a courthouse, a free library, and a number of fine schools. It is the seat of the Eastern Illinois Normal School. The first settlement was made in 1830, and its incorporation dates from 1855. Population, 1900, 5,488; in 1920, 6,600.

CHARLESTON, a city and port of entry in South Carolina, county seat of Charleston County, on a peninsula between Cooper and Ashley rivers, eighty-two miles northeast of Savannah, Ga. It is on the Southern, Atlantic Coast Line, and other railroads, and has regular steamboat connections with Boston, New York, and the leading ports of Europe. The harbor is landlocked and safe, and has been improved by jetties so as to admit the large sea-going vessels. A lighthouse with a flashing light, elevated 133 feet, stands west of the channel. The harbor is defended by Fort Moultrie, on Sullivan's Island, which has been improved by the Federal government.

Charleston has a water front of nine miles and the larger part has regularly platted and well-improved streets, but some of the thoroughfares in the older parts are narrow. The architecture is generally substantial, constructed mostly of stone and brick, and the newer buildings are tall structures with steel frames. The county courthouse is at the corner of Broad and Meeting streets, and near it are the city hall and the post office. Other fine buildings include the customhouse, the Thomson Memminger Normal School, the Saint Michael's Church (Protestant Episcopal), and the Roman Catholic Cathedral. It has a public library of 30,000 volumes. Among the educational institutions are the College of Charleston, the Porter Military Academy, the South Carolina Medical College, and the Avery Normal School for colored students. The Euston Home, the Charleston Orphan House, the city hospital, and the Confederate Home are among the charitable institutions. White Point Garden, a finely wooded park, contains the Jasper monument. Other objects of interests are the bust of Henry Timrod and the monuments of William Pitt and John C. Calhoun. The Battery, near the harbor, is a popular promenade.

Charleston is preëminently a manufacturing and commercial city. In the early years of the last century it was the chief cotton port of North America, but it still has a large coastwise and foreign trade. The manufactures include clothing, phosphates, furniture, cigars, machinery, refined oil, flour, boilers, and lumber products. Large quantities of fruit and early vegetables are grown in the vicinity and shipped to the markets in the North. It has an important wholesale and jobbing trade with cities of the interior. The exports consist chiefly of rice, cotton, fertilizers, lumber, cereals, and live stock.

Charleston was settled by the English in 1670, when a colony under William Sayle was planted on the west bank of the Ashley River, about three miles from the present city. The public offices were shortly after removed to the present site of Charleston, which soon became one of the chief seaports in America. It was held by the Americans during the early part of the Revolution, but was captured by the British in 1780, with a force of 16,000 under Sir Henry Clinton. The first bale of cotton exported from America to Europe was shipped from this port in 1784. The ordinance of secession was passed in Charleston, and Fort Sumter, in the harbor, was the scene of the first hostility of the Civil War. Half of the city was burned in 1864 by the Union forces, and the last two years of the war it was held by the Federals in a state of siege. A great earthquake destroyed much property in August, 1886. In 1901 it was the seat of the South Carolina Interstate and West Indian Exposition. Population, 1900, 55,807; in 1920, 67,957.

CHARLESTON, the capital of West Virginia, county seat of Kanawha County, on the Kanawha and Elk rivers. It is on the Kanawha and Michigan, the Chesapeake and Ohio, and other railroads, and has regular steamboat connections with many river ports. The chief buildings include the capitol, the county courthouse, the post office, and the Kearse Theatre. It has extensive dry docks and shipbuilding yards. The manufactures include furniture, wagons, glass, iron fences, and machinery. It is lighted by gas and electricity, and surrounded by extensive coal fields, and has a large trade in coal and produce. A fort was built here in 1786 and the city was incorporated in 1794. Charleston was made the capital of the State in 1869, but it was removed to Wheeling in 1875. It became the permanent capital in 1885. Population, 1900, 11,099; in 1920, 39,608.

CHARLOTTE (shär'lŏt), a city in North Carolina, county seat of Mecklenburg County, 110 miles north of Columbia, on the Southern, the Seaboard Air Line, and other railroads. It occupies a fine site on Sugar Creek and is surrounded by an agricultural country, which has deposits of stone and commercial clays. The chief buildings include a Carnegie public library, the county courthouse, the First National Bank, the Y. M. C. A. building, a military institute, and a United States mint. Among the industries are cotton mills, machine shops, railroad shops, and cottonseed mills. The general manufactures include fertilizers, earthenware, cotton goods, clothing, and machinery. It is the seat of a Lutheran and a Presbyterian college and of the Biddle University, a Presbyterian institution for colored students. Gas and electric lighting, pavements, sewerage, waterworks, and electric street railways are among the public utilities. It was settled in 1750 and incorporated in 1768. The Mecklenburg Declaration of Independence was adopted here in 1775 and the signers of this document are commemorated by a monument. Population, 1900, 18,091; in 1920, 46,318.

CHARLOTTENBURG (chär-lŏt'ten-bo͝org), a city of Germany, on the Spree River, three miles southwest of Berlin. It is connected with the capital city by an elevated railway and electric lines through the famous Thiergarten, which is a favorite promenade and zoölogical garden. The chief buildings include a royal palace, the Technical Academy, a military school, a fine public library, and numerous gymnasiums. It is the seat of the Royal Porcelain Factory, founded in 1761. Among the manufactures are glass, pottery, electrical apparatus, hosiery, clothing, cotton goods, toys, chemicals, and machinery. Charlottenburg was founded in 1705 by Frederick I., but its rapid growth is recent. The park has a Doric mausoleum which contains the remains of Frederick William III. and his wife, Queen Louisa, and their statues executed by Rauch. It is one of the most flourishing and beautiful cities in Europe. Population, 1905, 239,559; in 1920, 305,181.

CHARLOTTESVILLE (shär'lŏts-vĭl), a city of Virginia, county seat of Albemarle County, 100 miles northwest of Richmond. It occupies an elevated site on the Rivanna River and has transportation facilities by the Southern and the Chesapeake and Ohio railroads. The chief buildings include the county courthouse, the Albemarle College, the Rawlings Female Institute, and the University of Virginia. Monticello, the home of Jefferson, is a short distance southeast of the city. Charlottesville has manufactures of flour, cigars, machinery, and earthenware. Waterworks, electric lighting, and sewerage are among the public utilities. It was settled in 1744 and incorporated as a city in 1888. Population, 1900, 6,449; in 1920, 10,638.

CHARLOTTETOWN, a city of Canada, capital of the province of Prince Edward Island, in Queen's County, on the Prince Edward Island Railway. It is located on Hillsborough Bay, on the southern coast, and has an excellent harbor. Steamers carry trade regularly with the principal ports of Canada, and the railroad furnishes transportation facilities to all points of the island. It has manufactures of cotton and woolen goods, machinery, hardware, and clothing. The fisheries are important in that they supply catches for the trade and for canning. Among the public utilities are electric and gas lights, waterworks, sewerage, and paving. The Dominion buildings, the city hall, the courthouse, and a number of fine schools and churches are among the chief buildings. It is the seat of the Prince of Wales College and of a normal school. The French founded Charlottetown in 1750 and named it Port la Joie. Population, 1921, 12,347.

CHARNEL HOUSE (chär'nĕl), a depository under or near churches for the bones of the dead. In many ancient churches the crypt under the chapel was used for the purpose of reverently storing the bones, which are still preserved with much care.

CHARON (kā'rŏn), in classical mythology, the ferryman who transported the souls of the dead over the river Acheron to the infernal regions. He was represented as the son of Erebus and Night, and was supposed to wear a long beard. From one to three *oboli* (small coins) were placed in the mouth of the dead at the time of burial to compensate Charon for his service.

CHART, a representation of the whole or a portion of the earth's surface projected on a plane, by which the contour of the continents, the islands, and the ocean may be studied. Charts intended for navigators' use are made to represent the seas and oceans, and merely include the outlines of the coast and islands. The best known chart is the projection of the earth's surface by Mercator, called *Mercator's chart*. A *plane chart* is the representation of some part of the superficies of the earth, in which the spherical form is disregarded, the meridians are drawn parallel, the parallels of latitude are represented at equal distances, and the degrees of latitude and longitude are supposed to be of equal length. A chart representing the surface of the moon is called *selenographical*, while one representing the small parts of the earth is known as a *topographical*. See Map.

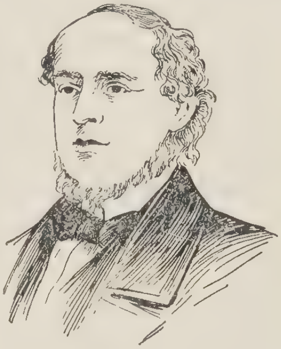
CHARTERHOUSE (chär'ter-hous), a school and hospital in England, founded by Thomas Sutton in 1611. It occupies the site of the celebrated Carthusian monastery established in 1371. After the monasteries were dissolved by Henry VIII., the land passed through several hands, until it was purchased by Thomas Sutton, who endowed the institution located here at present. The school is one of the largest in England and among its graduates are Grote, Steele, Blackstone, Addison, Thackeray, and John Wesley. In recent years the average attendance has been over 500 students. The hospital is maintained for the benefit of poor men, and those admitted must be bachelors, not less than fifty years of age, and members in good standing of the Church of England.

CHARTER OAK, an oak tree that formerly stood in Hartford, Conn., and became associated with early history. In 1687 Sir Edmund Andros marched to Hartford as the representative of King James II. to demand the charter of the colony with the intention of revoking it. Capt. James Wadsworth, hearing of the intention, hid the charter in the hollow of this oak. The tree was destroyed by a gale on Aug. 21, 1856, but fortunately a drawing had been made of it a few years previous.

CHARTRES (shär'tr'), a city of France, capital of the department of Eure-et-Loire, forty-eight miles southwest of Paris. It is located on the Eure River, has ample railway facilities, and carries a brisk trade in merchandise and produce. Some of the streets are narrow and crooked, but the newer parts are well built. It has a fine Gothic cathedral of the 11th century, surmounted by a tower 382 feet high, and the public library has 35,000 volumes. Among the manufactures are clothing, leather, hosiery, and machinery. Chartres was founded by the Carnutes, was the seat of the College of Druids, and Francis I. made it a duchy. Henry IV. captured it in 1519. It was occupied by the Germans in 1870. Population, 1922, 19,850.

CHARYBDIS. See **Scylla and Charybdis.**

CHASE (chās), **Salmon Portland,** Chief Justice of the United States, born at Cornish, N. H., Jan. 13, 1808; died May 7, 1873. He graduated at Dartmouth College in 1826, became a school teacher, and entered the practice of law in Cincinnati and later in Washington. He was profoundly interested in the movement against slavery, being one of the leaders of the Liberty party, and later became allied with the Free Soil party. He was chosen by the Democrats to the United States Senate from Ohio in 1849, where he distinguished himself as an opponent of the Kansas-Nebraska Bill, but later went over to the Republicans and was elected Governor in 1855, serving four years. In the convention of 1860 he was a leading candidate for President, and was chosen by President Lincoln as Secretary of the Treasury, in which position he served four years, beginning in 1861. His supervision of the finances of the nation during a critical and difficult period is rated among the eminent national services. His advocacy of demand notes and legal-tender greenback money placed him in high repute, but the latter was partially impaired when Congress inserted an exception clause, which partly destroyed its monetary value and reduced it greatly below par with gold. Shortly after leaving the Treasury Department, he was appointed Chief Justice of the Supreme Court and held that office until his death. He was the presiding officer at the impeachment trial of President Johnson, and was mentioned as a candidate for the Presidency in the Democratic national convention in 1868, but his position on Negro suffrage was instrumental in causing his defeat for the nomination.


SALMON P. CHASE.

CHASE, Samuel, signer of the Declaration of Independence, born in Somerset, Md., April 17, 1741; died June 19, 1811. He studied law, displayed much patriotism in advocating the cause of the colonies, and became a member of the Continental Congress in 1774, in which he held a place for four years. He was one of the committee to urge Canada to form a union with the colonies against England, and after the war was sent to England to recover money deposited in that country by Americans prior to the war. He served as a member of the Maryland convention that ratified the Federal Constitution, and in 1791 became Chief Justice of Maryland. In 1796 he was appointed a judge of the Supreme Court by President Washington. He was allied with the party of Thomas Jefferson, and in 1803 was impeached for partisanship, his chief opponent being John Randolph, but the Senate acquitted him.

CHAT, a small bird of the warbler family, found in North America, chiefly along the eastern coast. The tail is somewhat longer than the wing, the color is greenish above and yellowish beneath, and the song uttered by the male in the mating season is a curious mixture of caws and whistles. It feeds on insects and inhabits thickets and copses. The nest is built in bushes near the ground. The *whinchat* of England belongs to this class of birds.

CHATEAUBRIAND (shȧ-tō-brē-än'), **François René Auguste, Vicomte de,** author, born at Saint Malo, France, Sept. 4, 1768; died July 4, 1848. He studied in the College at Rennes, and traveled in America in 1790, but on reading of the flight and arrest of Louis XVI.

immediately returned to France. Engaging in the cause of the royalists, he was wounded at the siege of Thionville and escaped to England, where he spent some time in poverty. He returned to Paris in 1800 and was appointed by Napoleon to the embassy in Rome, and later as ambassador to the republic of Valais. This position he resigned and traveled in the Holy Land, visited Greece, Carthage, and Alexandria. He ranks among the best writers of French romance. Among his many productions and the ones making the deepest impressions are "Atala" and "The Genius of Christianity." His chief work on government and history, published in 1814, under the title "Bonaparte and the Bourbons," exercised an influence in restoring the Bourbons in France.

CHATEAU-THIERRY (shä-tō′-tê-ȧr-rē′), a town of France, in the department of Aisne, on both sides of the Marne River and several railways, 35 miles northeast of Paris. Napoleon, in 1814, defeated the Germans and Russians at this place. It was captured by the Germans in June, 1918, from the Allies, but was recaptured before the end of the month. In the campaign from Chateau-Thierry northward to Fismes the Americans proved their excellent fighting qualities. Population, 1919, 7,485.

CHATHAM (chăt′am), a city of Kent County, Ontario, on the Thames River, forty-five miles northeast of Detroit, Mich. It is on the Wabash and the Canadian National railroads and has regular steamboat communication. The chief buildings are the town hall and several schools and churches. The manufactures include woolen goods, machinery, and furniture. It has public waterworks, sewerage, electric lighting, and a large trade in farm produce, soap, tobacco, and lumber. Population, 1901, 9,068; in 1921, 13,256.

CHATHAM, a town of New Brunswick, in Northumberland County, on the Miramichi River. It is pleasantly situated near Miramichi Bay, six miles northeast of Newcastle, and has transportation facilities by an important railway. It has a fine harbor and is a port of entry. The chief industries include foundries, electric works, shipyards, and flouring and lumber mills. It has a college, a hospital, several fine churches, and a Roman Catholic cathedral. The export trade is chiefly in fish, lumber, and merchandise. Population, 5,500.

CHATHAM, a fortified city of England, in the county of Kent, thirty miles southeast of London. It is located on the estuary of the Medway, near Rochester, with which it is closely united socially and commercially. Some of the streets are narrow and irregular, but the newer thoroughfares have been improved by paving and modern architecture. It is important as a military post, has a military hospital and school of engineering, and its fortifications are the scenes of many drills and reviews. About 500 acres are included in the royal dockyard, which was established by Queen Elizabeth, and its shipyards are ample for the construction of the largest vessels. Chatham is not important as a manufacturing center aside from its shipyards and metal mills, in which about 5,000 men are employed. It has considerable trade in merchandise and produce and has modern utilities, such as gas and electric lights and urban and interurban rapid transit. Population, 1922, 40,840.

CHATHAM, Earl of, son of Robert Pitt. See **Pitt, William.**

CHATHAM ISLANDS, an island group located in the Pacific Ocean, about 450 miles east of New Zealand, under which the government is administered. The area is 375 square miles. The soil is fertile and produces cereals, vegetables, and fruit. Sheep and cattle raising and whaling are the leading industries. The islands were discovered by Lieutenant Broughton in 1791 and were so named from his ship. A majority of the inhabitants are Maoris and Morioris. Population, 1922, 399.

CHATTAHOOCHEE (chăt-tȧ-hōō′chê), a river in Georgia, having a length of about 510 miles. It is navigable for boats 325 miles. It rises in the Blue Ridge Mountains, in Georgia, flows south, forming part of the boundary between Alabama and Georgia, and unites with the Flint River to form the Appalachicola.

CHATTANOOGA (chăt-tȧ-nōō′gȧ), a city of Tennessee, county seat of Hamilton County, on the Tennesse River, about 155 miles southeast of Nashville. It is finely situated in a fertile valley, on the Queen and Crescent, the Southern, the Central of Georgia, and other railroads. Several electric lines furnish transportation to suburban and interurban points. The surrounding country is rich in agricultural and mineral products. The manufactures include clothing, ironware, nails, machinery, cigars, furniture, cotton and leather goods, railroad cars, and flour. It has about 385 manufacturing establishments, gas and electric lighting, waterworks, and numerous jobbing houses. The obstructions formerly in the Tennessee River were removed by the United States government, and it is navigable about eight months of the year.

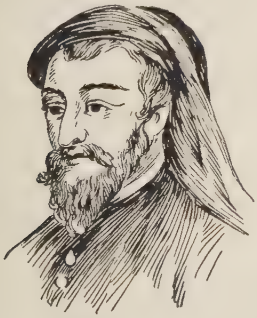
Chattanooga has a fine county courthouse, a public library, a customhouse, a Federal building, and an opera house. Among the public institutions are the Grant University, the Chattanooga Medical College, a Dominican convent, and a number of commercial colleges and private schools. A short distance south is Lookout Mountain, near the line between Georgia and Alabama, which furnishes a fine view of the surrounding country. In the Civil War it was the scene of severe contests. It was within hearing of the famous battles of Missionary Ridge, Chickamauga, and Lookout Mountain. A national military park has been platted by the government on the site of the Battle of

Chickamauga, a short distance southeast of the city. The first settlement was made on the site of the city in 1836 and it was known as Ross's Landing, but was incorporated as Chattanooga in 1851. Population, 1920, 57,895.

CHATTEL (chăt't'l), in law, a term used to describe, with certain exceptions, all property of a personal or movable nature. It embraces the portion of *personal property* that can be possessed and delivered, and in a general sense includes all property which is less than a life estate in land. Real chattels pertain to *real estate,* such as a lease of land or a mortgage taken as security. *Personal chattels* are things movable, which may be carried about by the owner, such as money, animals, household goods, promissory notes, etc., though in the common parlance of some countries the term does not include money or evidences of indebtedness.

CHATTERTON (chăt'ẽr-tŭn), **Thomas,** poet, born in Bristol, England, Nov. 20, 1752; suicided Aug. 25, 1770. He descended from poor parents, was educated at a charity school, and was apprenticed to an attorney at the age of fourteen. His first extensive poetical production was published in 1768, when the new bridge at Bristol was completed, entitled "Description of the Friars' First Passing Over the Old Bridge." He corresponded with Horace Walpole in 1769, while engaged in writing his "Anecdotes of Painters in England." This production contains descriptions of antique poems and writings not known to Walpole and aroused his interest. Later he went to London, where he produced several letters, satires, and pamphlets, but became disappointed on account of failure to secure substantial returns for his writings. He ranks as a prodigy in literature, largely because his early writings were found to be copied from former writings. He seems to have possessed a matured intellect vary early and ended his life when but eighteen years old.

CHAUCER (chạ'sẽr), **Geoffrey,** "Father of English Poetry," born in London, England, in 1340. His history is not clear in many points, but it is certain that he studied at Cambridge and afterward removed to Oxford. Several writers relate that he traveled extensively in his youth, and later enrolled as a law student in the Inner Temple. He married a sister of the subsequent wife of John of Gaunt. This alliance proved a valuable aid in entering the court of Edward III., then the most brilliant in Europe. His high poetic talent raised him to favor at the court, and in 1367 he was granted a pension equal to about $1,000 in modern money. His military achievements of 1359, in France, where he was taken prisoner, and his literary talent, alike contributed toward obtaining this pension. His fortune declined when Richard II. ascended the throne, and, sympathizing with an insurrection in the streets of London, he was obliged to seek safety on the continent, but was driven back to England by poverty and privations, where he was promptly arrested and thrown into the Tower. A few years later a pension of a hundred dollars was again conferred upon him and he held several offices, but a number of misfortunes overtook him. His wife died in 1387, and he was greatly pressed for means of support, for the reason that he never possessed the requisite elements to provide for future emergencies. He died in the first year of the reign of Henry IV., in 1400, and was buried at Westminster Abbey.


GEOFFREY CHAUCER.

The writings of Chaucer are among the most excellent in the English. His best work is "The Canterbury Tales," the early portion of which was written during his imprisonment. The first part is called the "Prologue," in which we learn of thirty people of various classes who gathered at Tabard Inn, Southark, some afoot, others on horseback. These people were wending their way to Canterbury to say prayers at the tomb of Thomas à Becket. Since the road was bad and infested with thieves, the company kept together and gathered at the Inn to tell two stories going and two returning; the one telling the best should have his supper free. These stories were published in the "Prologue." They carry us back to Chaucer's time, and show his remarkable power of observing things and persons. However, he did not finish the set, as there should have been 120 stories, whereas we have only twenty-five. Besides these, Chaucer wrote "The Legend of Good Women," "The House of Fame," "The Flower and Leaf," "The Testament of Love," "The Romaunt of the Rose," and "Troylus and Cryseyde." Chaucer wrote in verse; even the tales themselves, with two exceptions, are written in verse.

CHAUDIÉRE (shō-dyâr'), a river of Canada, in the province of Quebec. It is the outlet of Lake Megantic, near the northwest boundary of Maine, and flows in a general course toward the northwest to the Saint Lawrence, into which it discharges about seven miles above Quebec. Chaudière Falls, about 115 feet high, are three miles above its mouth. The river is 120 miles long and the scenery on its banks is very diversified and picturesque.

CHAUDIÉRE LAKE, an extension of the Ottawa River, in Canada, immediately above the city of Ottawa. Below the lake are the Chaudière Falls, which are spanned by a railway bridge and a road bridge, connecting Ottawa with Hull. Chaudière Lake extends properly from these cities to the mouth of the Mississippi River, a distance of about thirty miles.

CHAUFFEUR (shạf'fẽr), the name applied to the driver of motor vehicles, as motor trucks or automobiles. In French, the term originally applied to the stoker of a steamship or locomotive; now it is used in designating any one who makes a business of driving any motor vehicle.

CHAUTAUQUA (shȧ-tạ'kwȧ), a celebrated summer resort on Chautauqua Lake, in Chautauqua County, New York. Chautauqua Lake is about two miles wide and eighteen miles long, 1,300 feet above the sea, with an outlet into the Allegheny River. The grounds were purchased in 1874, by the Chautauqua Sunday School Assembly. The town is the seat of the New York State Summer Institute. Population, 1905, 3,972; in 1921, 3,533.

CHAUTAUQUA Literary and Scientific Circle, an institution incorporated for study and instruction. It was first promoted largely under the influence of Louis Miller of Akron, Ohio. In 1878 it was organized at Chautauqua, N. Y., with Louis Miller as president and John H. Vincent as chancellor. The object is to promote habits of reading and study in the sciences, arts, nature, and secular and sacred literature, and to enable the members to make a review of the college courses. Enrollment is effected by the payment of a fee of fifty cents, no examination being necessary. The enrollment may be for one year, but the course consists of four years, after the completion of which a diploma is granted. The annual meeting usually occurs in July and August. The official organ, *The Chautauquan,* is published at Meadville, Pa.

At present there are a large number of Chautauqua assemblies in the United States, Canada, Japan, India, England, South America, Australasia, and Africa; the membership exceeding over half a million persons. About 10,000 circles were established during the first twenty years of the movement, and about 40,000 of the total enrollment completed the course. The Catholic Summer School, organized at Plattsburg, N. Y., is a similar organization. The courses of Chautauqua assemblies consist of work in literature, languages, mathematics, science, pedagogy, music, fine arts, expression, physical education, practical arts, and sacred literature. As a general rule the study work is done largely in the homes, while the summer meetings are inspirational and bring the members in contact with prominent thinkers and speakers of the world, as well as to aid in the way of sociability.

CHEBOYGAN (shē-boi'gan), county seat of Cheboygan County, Michigan, at the extreme northern portion of the southern peninsula, on the Michigan Central Railroad. It is finely located at the mouth of the Cheboygan River, on Lake Huron, and has a large lake and railway trade. The chief buildings include the courthouse, a public library, and the high school. It has manufactures of flour, lumber, machinery, and wood products. Several iron foundries, planing mills, and sawmills produce large quantities in their lines. The country toward the south is productive in agriculture and fruit. Cheboygan was settled in 1849 and incorporated in 1877. Population, 1920, 5,642.

CHECK, a bill of exchange made payable to the bearer, or to the order of the payee, on demand. A check made payable to the bearer may be transferred without endorsement, while one made payable to order must be *indorsed* to be transferred or paid, that is, the name of the person in whose favor it is drawn must be written on the back of it. Checks are used to transact the largest volume of business. They are a commercial convenience, both in local trade and in making payments to parties at a distance.

CHECKERED BEETLE, an insect more or less widely distributed in North America, so named from its peculiar markings, usually dark brown with checks of white and yellow. Many species are included, some of which have a form much like an ant. They subsist largely on the sweet sap of plants, but some frequent the hives of bees and others feed on the carrion of animals. A number of species are harmful to bee keeping, since they enter the cells and feed on the honey and the young bees.

CHECKERS, a game played by two persons with *men* or *checkers* on a board divided into sixty-four equal squares, colored white and black. Each player has twelve men or checkers, colored differently, usually made flat and circular. The squares are numbered alternately from one to thirty-two, and the players place the board so the corners four and twenty-nine are at the left hand. It is immaterial whether the men are placed on the black or white squares, or whether any of the squares are numbered, but the contestants cover the squares from one to twelve and from twenty-one to thirty-two, respectively, and the moves are confined to one step diagonally at a time. When a player leaps over one or more men belonging to the opponent under the rules of the game, these men are said to be *taken,* and the game is won by the player who succeeds in taking all of the checkers of the opponent. Moves are made only in the direction of the side occupied by the opposing player until a man is moved into the last line of the opposite side, when he is crowned as *king,* and after that may be moved diagonally in any direction.

CHEDUBA (chē-dōō'bȧ), an island in the Bay of Bengal, about ten miles from Arakan, to which province it belongs. The area is 245 square miles. The soil is fertile and produces rice, sugar cane, tobacco, cotton, hemp, and indigo. Petroleum is the chief mineral product. Several extinct volcanoes are located near the coast, and some of the volcanic cones emit gas and mud. Cheduba, or Manaung, is the chief town and has a population of 2,150. The island has been a British possession since 1824. Population, 1922, 24,500.

CHEESE (chēz), an important dairy product made of the curd or casein of milk, with variable quantities of butter and salt, formed into molds and cured or ripened by keeping for a time. In America it is made almost entirely of milk of the cow, but in parts of Europe the milk of goats and ewes is used, while in Arabian countries it is produced largely from the milk of mares and camels. The cheese generally sold in the American markets is known as *Cheddar* and *Swiss*. Other varieties of cheese include *Brick, Limberger, Neuchâtel, Edam*, and *Roquefort*. The Cheddar is the favorite in the markets of the United States and Canada. This kind of cheese includes several classes, such as the whole milk, skim milk, and cream cheese. The whole milk cheese is made from unskimmed milk and contains from twenty to forty per cent. of fat or cream, and thirty to forty per cent. of casein. Skim milk cheese is poor in fat, containing only from one to four per cent. Cream cheese is the richest, containing from sixty to seventy per cent. of fat, and is more digestible than any other kind, owing to its containing less casein. The production of cheese is one of the important industries in many agricultural districts. Farmers usually sell their milk or cream to private individuals, or operate a factory on the coöperative plan, owned by the farmers themselves.

In making Cheddar cheese, the milk is curdled or coagulated by adding an acid, sour milk, or rennet, and the watery portion or *whey* is separated from the insoluble *curd*. The curd is then worked into a uniform mass, after which salt is added, and the whole is pressed into a vat or mold to form cheese, after which it is placed in a curing room and allowed to ripen or cure. It is best to have the temperature of the curing room range at from 70° to 80°, but the temperature should be kept uniform at all times. The cheese is turned each day, and the upper surface is rubbed with the hand. After from three to six weeks it is sold on the market as mild, soft cheese, but the Cheddar does not reach its best condition until from three to six months of curing.

CHEESE FLY, a two-winged fly, mostly of a shining black color, which lays its eggs on cheese and cured meat. It is a pest in stores and dairies. The eggs are white and hatch in about thirty hours, and the larva or maggot feeds voraciously and matures in about ten days. The maggot is known as *cheese hopper* from its habit of forming a circle by bringing the two ends of the body together and then jerking abruptly, causing itself to be thrown a considerable distance. An insect known as cheese mite. feeds upon cheese, flour, sugar, etc.

CHEHALIS, county seat of Lewis County, Washington, 30 miles south of Olympia, on the Chehalis River and on the Great Northern and other railroads. It has sanitary sewers, electric and gas plants, and paved streets. The features include the city hall, court house, high school, public library, and many churches. It was first settled in 1880. Population, 1920, 4,558.

CHELSEA (chĕl'sē), a suburb of London, England, on the Thames River, distinguished principally for containing the Chelsea Hospital, an asylum for old and disabled soldiers of the British army. Chelsea is famous as the home of many celebrated persons, among them Princess Elizabeth, Sir Thomas Moore, Carlyle, Swift, Walpole, and George Eliot. It has a number of charities, several fine schools and churches, and a considerable trade. Population, 1921, 66,404.

CHELSEA, a city in Suffolk County, Massachusetts, three miles north of Boston, on the Boston and Maine Railroad. It is connected with Boston by a system of electric railways. On the opposite of the Mystic River is Charlestown, with which it is connected by a bridge. The chief buildings include the city hall, the courthouse, the Fitz public library, and several hospitals. It has manufactures of chemicals, rubber, sewing machines, linseed oil, brassware, safes, woolen goods, tools, and brushes. The first settlement was made in 1626 and it was incorporated under its present name in 1638. Population, 1920, 43,184; in 1925, 47,247.

CHELTENHAM (chĕlt'năm), a famous water place in Gloucestershire, England, among the Cotswold Hills. George III. made a visit to its mineral springs in 1788, and since then it has grown largely in popularity. It has a number of colleges, public and private edifices, parks, and promenades, and a large trade in merchandise. Among the chief buildings are the public library, an art school, and the Gothic Church of Saint Mary. Being chiefly a resort and educational center, it has no manufactures. Population, 1922, 53,394.

CHEMISTRY (kĕm'ĭs-trȳ), the branch of physical science which investigates the elements of which bodies, whether organic or inorganic, are composed, and treats of the relations of one kind of matter to another. The word was derived from Khem, the name of the Egyptian god of generation, productiveness, and vegetation.

History. In its infancy chemistry was the art of distilling the juices of vegetable substances for healing purposes, and the first marked stages of its development were effected by the Greeks, who devoted much thought to investigation of the medical properties and uses of plants. Alchemy was the forerunner of chemistry, and bore a relation to it quite like astrology did to astronomy. The science was brought from Egypt to Asia by the Arabs, and by the Moors to Spain, from whence it was made known throughout Western Europe. However, its early history is quite closely associated with that of alchemy, and it did not take on the form of a distinct science until after the Middle Ages.

Robert Boyle (1627-1691) may be regarded the first modern chemist. He published his "Skeptical Chemist" in 1669 and was the first to introduce chemical tests or reagents. That respiration and combustion produce the same effect on atmospheric air was discovered by Mayhow, of Oxford, in 1674. Priestley discovered oxygen in 1774, and Cavendish in the same year announced the exact constituents of water, while Scheele made known the existence and nature of chlorine. These and other discoveries enabled Lavoisier to revolutionize and systematize the science. Vanquelin discovered chromium in 1797, Dalton introduced the atomic theory in 1803, Sir Humphrey Davy announced the existence of potassium and sodium in 1807, and Klaproth analyzed about 200 minerals prior to 1870. Others contributing to the advancement of chemistry include Wöhler, Wurtz, Rutherford, Liebig, Faraday, Bunsen, Berzelius, Crookes, Hoffmann, and Berthelot.

BRANCHES OF CHEMISTRY. Modern chemistry is divided into *organic* and *inorganic*, the former treating of the hydro-carbons and the compounds derived from them, and the latter of metallic and nonmetallic elements. Another classification is *pure* or *theoretical* chemistry, and *applied* or *practical*. Theoretical chemistry treats of the laws governing chemical action, while practical chemistry deals with the application and economic relation of chemistry to the arts. The latter is usually designated according to the arts or occupations to which it relates, as agricultural, medical, sanitary, physiological, metallurgical, etc. Some writers group the subject under *analytical* and *descriptive* chemistry. Analytical chemistry is concerned with the art of determining the composition of substances, while descriptive chemistry deals more particularly with the chemical and physical characteristics of substances.

ELEMENTS AND COMPOUNDS. Matter may be defined as anything that occupies space. It is capable of being measured and weighed. The various kinds of matter constitute different substances, which differ from each other by such general properties as relative weight, color, hardness, etc. Some substances are capable of existing in the form of solid, liquid, and gas. This is easily recognized in water, which may exist as mist, fog, rain, frost, snow, and ice. In any of these forms it represents the same substance, the nature of which is not changed in the process of being converted from one into another. These and similar changes are called physical changes, and differ from chemical changes in that new substances are produced in the latter. The rusting of iron and the burning of wood are examples of chemical changes. In a physical change the composition of the molecule is not affected, while in a chemical change the atoms are rearranged so as to form new molecules and the specific properties of a substance are destroyed. There are two general classes of matter, known as *compounds* and *elements.*

Compounds embrace all those substances which are composed of more than one kind of matter, as, for instance, water, which consists in the proportion of two volumes of hydrogen to one of oxygen. Chemists are acquainted with only about ninety substances which they have been unable to change into more simple forms and these are designated *elements.* In elements the atoms, which form small indivisible particles, are all of the same kind. On the other hand, in compounds there is a notable difference in the atoms—a fact easily ascertained by the use of a microscope. There is also a notable difference between compounds and mixtures. For instance, gunpowder is a mixture of charcoal, saltpeter, and sulphur. That it is not a chemical compound can be proven by microscopic examination, and also by the circumstance that the three constituents may be again separated by a process of decomposition. However, if a sufficient degree of heat to explode the powder is applied, a chemical change takes place which produces gases and solids of an entirely different kind than the matter contained in the powder. The atoms common to the different kinds of matter are held together by a force called *chemical affinity.* It depends not only upon the kinds of atoms between which it is exerted, but also upon temperature, its intensity varying in different substances at different temperatures.

The elements are classed as metals and nonmetals, and, like the compounds, are designated by a system of symbols, thus Cu=copper; Ba S=baric sulphide. Ductility, malleability, metallic luster, and marked ability to conduct heat and electricity are the essential points in which metals differ from the nonmetallic elements. The following are the nonmetals: hydrogen, helium, chlorine, bromine, iodine, fluorine, oxygen, sulphur, selenium, tellurium, nitrogen, phosphorus, arsenic, antimony, boron, carbon, silicon, and argon. Below is a list of the principal elements, together with their symbols and the approximate weight of their atoms compared to the weight of an atom of hydrogen:

NAMES OF THE ELEMENTS.	SYMBOLS.	ATOMIC WEIGHTS.
Actinium	Ac	58.3
Aluminium	Al	27
Antimony	Sb	120
Argon	A	40
Arsenic	As	75
Barium	Ba	137
Bismuth	Bi	208
Boron	B	11

Names of the Elements. (*Continued.*)	Symbols.	Atomic Weights.
Bromine	Br	80
Cadmium	Cd	112
Caesium	Cs	133
Calcium	Ca	40
Carbon	C	12
Cerium	Ce	141.2
Chlorine	Cl	35.5
Chromium	Cr	52.5
Cobalt	Co	59
Columbium	Cb	93.7
Copper	Cu	63.1
Didymium	Di	145.4
Erbium	Er	166
Fluorine	F	19
Gallium	Ga	69
Germanium	Ge	72
Glucinum	Gl	9
Gold (aurum)	Au	195.7
Helium	He	4
Holmium	Ho	16.2
Hydrogen	H	1
Indium	Jn	113.4
Iodine	I	127
Iridium	Ir	192
Iron (ferrum)	Fe	56
Krypton	Kr	58.74
Lanthanum	La	139
Lead	Pb	207
Lithium	Li	7
Magnesium	Mg	24
Manganese	Mn	55
Mercury	Hg	200
Molybdenum	Mo	96
Neon	Ne	19.94
Nickel	Ni	59
Niobium	Nb	94
Nitrogen	N	14
Osmium	Os	190
Oxygen	O	16
Palladium	Pd	106.6
Phosphorus	P	31
Platinum	Pt	193.5
Polonium	Po	12.6
Potassium	K	39.1
Radium	Ra	223.3
Rhodium	Rh	102.2
Rubidium	Rb	85.2
Ruthenium	Ru	100.9
Scandium	Sc	44
Selenium	Se	79.5
Silicon	Si	28
Silver	Ag	108
Sodium	Na	23
Strontium	Sr	87.5
Sulphur	S	32
Tantalum	Ta	182
Tellurium	Te	125
Thallium	Tl	204
Thorium	Th	234
Tin (stannum)	Sn	118
Titanium	Ti	48
Thulium	Tu	170.4
Tungsten	W	184
Uranium	Ur	238
Vanadium	V	51
Xenon	Xe	128
Ytterbium	Yt	173
Yttrium	Y	89
Zinc	Zn	65
Zirconium	Zr	90

Among the more recently discovered elements are dysprosium, hafnium, illinium, lutecium, masurium, radon (niton), and rhenium.

CHEMNITZ (kĕm′nĭts), a city of Germany, at the base of the Erzgebirge, on the Chemnitz River, in the kingdom of Saxony. Schillerplatz contains the Church of Saint Peter and the Royal Technical School. Other noted buildings are the railway depot, the post office, the Imperial Bank, and the city hall. It is particularly noted for its manufacture of cotton prints, woolen and silk textiles, handkerchiefs, chemicals, machinery, and books. It has a brisk trade in produce and is a large exporter of merchandise. The streets are generally paved with stone and macadam. An extensive system of electric railways furnishes communication to all parts of the city and many interurban points. The waterworks, sewerage, and public library are owned by the municipality. Population, 1905, 244,927; in 1920, 287,340.

CHEMNITZ, Martin, distinguished Protestant theologian, born in Brandenburg, Germany, Nov. 9, 1522; died in Brunswick, April 8, 1586. He studied at Frankfurt and Wittenberg, and became rector of the cathedral school of Königsberg. In 1550 he began to devote himself seriously to theology, lectured at Wittenberg, and produced many writings, which caused him to rank, next to Luther and Melanchthon, as the most distinguished theologian of the 16th century. His writings include works on all subjects germane to theology. It is due largely to his efforts that the churches of Saxony and Swabia adopted the reformed confession of faith.

CHENAB (chē-näb′), a river of British India, in the Punjab. It rises in the Himalaya Mountains, joins the Ghara near Uchh, where it assumes the name of the Panjnad, and near Mithankot flows into the Indus. The length is about 775 miles and it is navigable a considerable of this distance. In the lower course it is about one mile wide.

CHEOPS (kē′ŏps), the name of a despotic ruler of Egypt, known to the Egyptians as Khufu, but called Cheops by Herodotus. He lived about 2800 or 2700 B. C., and in his time the largest Egyptian pyramid was built at Gizeh. Herodotus expressed the opinion that he employed consecutively 100,000 men in this enterprise for twenty years. See **Pyramid.**

CHEPHREN (kĕf′rĕn), King of Egypt, called Khafra by the Egyptians. He was the successor of Cheops and the builder of the second great pyramid at Gizeh. The pyramid of Chephren is close to the Sphynx and the Great Pyramid.

CHER (shâr), a river of France, rises in the department of Creuse, and after a course of 200 miles toward the northwest joins the Loire near Tours. It is navigable to Vierzon, 45 miles from its mouth, and the Berry Canal runs parallel to it in the upper course. The Arnon, Evre, and Tardès are its chief tributaries.

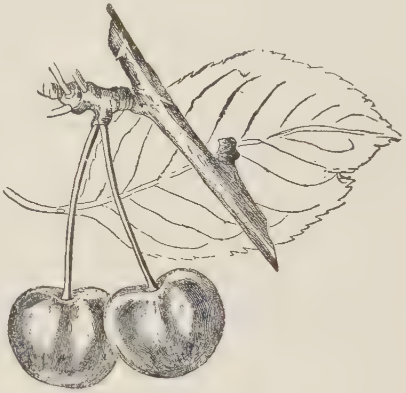
CHERBOURG (shĕr′bûrg), a strongly fortified naval station and seaport of France, at the mouth of the Divette River, on the English Channel. It has railroad facilities and a mild climate, and is protected by a substantial breakwater, which incloses a space of nearly 2,000 acres. This breakwater is one of the most famous in the world. It is built so as to be protected on three sides by the land, and at the apex of the angle formed by the meeting of the two branches is a central fort or battery. The city is defended by regular forts and redoubts and has two harbors, one for naval and the other for commercial enterprises. Among the chief industries are machine shops, sugar refineries, cotton and woolen mills, tanneries, and shipyards. The chief buildings include the church of Saint Trinité, the Hôtel de Ville, a museum, and a marine library with 30,000 volumes. Cherbourg owes its prosperity to Napoleon I., who planned and constructed the great defenses as a means of protecting France against an invasion from the north, and his plans were enlarged by Napoleon III. and others. Population, 1921, 43,837.

CHERBULIEZ (shâr-bü-lyâ'), **Charles Victor,** novelist, born at Geneva, Switzerland, July 19, 1829; died Nov. 19, 1899. He was the son of a French professor in Geneva, where he studied history and philosophy, and subsequently attended the universities of Bonn, Berlin, and Paris. In 1881 he was chosen a member of the French Academy, was made an officer of the Legion of Honor in 1892, and traveled extensively. His writings have been translated generally into English and German. They include "Prosper Randoce," "Meta Holdenis," "Miss Rovel," and "Lasdislas Bolski."

CHEROKEE, county seat of Cherokee County, Iowa, 45 miles northeast of Sioux City, on the Little Sioux River and on the Illinois Central Railroad. The chief buildings include the high school, court house, city hall, public library, and Iowa State Hospital for the Insane. It has machine shops, sanitary sewers, and an extensive trade in farm produce. It was settled in 1856. Population, 1925, 4,807.

CHEROKEES (chĕr-ô-kēz'), a tribe of North American Indians who occupied the upper valley of the Tennessee River prior to 1830. They were friendly to the English in the wars against the French, and ceded lands to Governor Glen for the construction of forts within their territory in 1755. In 1812 they rendered valuable service in General Jackson's army against the British. Their lands were ceded to the United States as early as 1817 in exchange for lands on the Arkansas and White rivers, a portion of which is now occupied by Oklahoma. They were removed thither by the government in 1838. In the Civil War they sided with the Confederates, taking part in the Battle of Pea Ridge, but afterward were divided into two factions. The Cherokees are noted as the most progressive of the Indian tribes. They have an alphabet and convenient vocabulary, and publish newspapers and books in their own language. The government of the United States provided schools and colleges for their education. Their architects have learned to construct beautiful houses. Many Cherokees have grown exceedingly wealthy. At present they number about 20,000.

CHERRY (chĕr'rȳ), an ornamental fruit tree of the plum or prune variety, extensively cultivated in the Temperate zones. It is of Asiatic origin, and, according to Pliny, was brought to Italy by Lucullus about 68 B. C. It thrives best in temperate climates and bears abundantly. The fruit is eaten fresh, dried, and canned *Kirschwasser* and *maraschino* are brandies made of the fruit. Wild species thrive in many countries and yield excellent woods for cabinet work and furniture. Among the wild cherries are the chokecherry and the black cherry. The fruit furnishes astringent medicines. The native trees in North America attain a height of a hundred feet, and a diameter of from three to four. The species cultivated extensively in gardens and parks for ornament and fruit belong mainly to two kinds, the *gean cherry* and the *bird cherry.* However, many species have been improved by cultivation, such as the black cherry, red heart and white heart. Cherries are grown extensively in Kansas, Pennsylvania, Indiana, British Columbia, and other sections of the continent.



CHERRY: LEAF AND FRUIT.

CHERRY LAUREL, the name of several evergreen shrubs and trees native to Asia Minor. The common cherry laurel has lanceolate leaves and racemose flowers, and is cultivated extensively in the gardens of Europe and America. The leaves are poisonous from the abundant hydrocyanic acid which they contain. They yield the laurel water, known in German as *kirschwasser,* which is used in medicine as a substitute for hydrocyanic acid. An oil somewhat similar to that derived from the bitter almonds is obtained from the leaves, but must be used with caution in flavoring sauces, pudding, etc.

CHERRY VALLEY, a village of New York, in Otsego County, sixty-eight miles west of Albany. It was the scene of the Cherry Valley Massacre at the time of the American Revolution, on Nov. 11, 1778, when an attack was made by 600 Indians under Joseph Brant and 200 English under Walter N. Butler. Nearly all of the buildings were burned, sixteen soldiers of the small garrison and thirty of the inhabitants were killed. The prisoners, seventy-one in number, were led away half naked and were treated with great cruelty. Soon after General Sullivan conducted an expedition through the State of New York to punish the Indians and protect the settlers.

CHERSONESUS (kĕr-sȯ-nē′sŭs), the Greek name of several peninsulas and promontories. The ancient Greeks applied this term to the Tauric Chersonese, the modern Crimea; to the Cimbrian Chersonese, now Jutland; and to the Tracian Chersonese, a region northwest of the Hellespont.

CHERUBINI (kå-rōō-bē′nē), **Marie Luigi Carlo Zenobio Salvatore,** musical composer, born at Florence, Italy, in 1760; died in Paris, France, March 15, 1842. His early musical training was under eminent instructors in Florence, and he afterward studied in Bologna. He visited London in 1784 and subsequently settled in Paris, where he became director of the Conservatory in 1821. Among his most eminent compositions are "The Water Carrier" and "Alibaba." He produced numerous sacred compositions of much merit, and was regarded by Beethoven the greatest living master of sacred music.

CHERUSCI (kē-rŭs′sī), an early German tribe which dwelt between the Weser and Elbe rivers. The Cherusci are noted for the great victory of their leader, Arminius, who formed an alliance with other German tribes and conducted a warfare against the Romans under Varus, whose forces he defeated and annihilated in the forest of Teutoburg, in the year 9 A. D. The tribe was overcome by the Chatti, after the death of Arminius, and later became subject to the Franks.

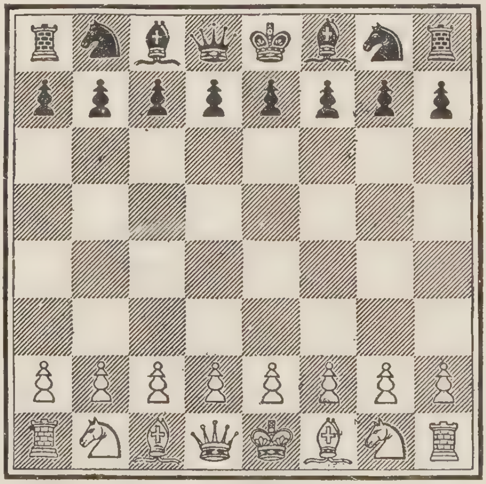
CHESAPEAKE (chĕs′å-pēk), a large bay in Maryland and Virginia, dividing Maryland into two parts. It enters the United States from the Atlantic Ocean between Cape Charles and Cape Henry, where it is sixteen miles wide. The width is from four to forty miles. It contains many harbors, is valuable for its excellent oyster fisheries, and is safe and easy to navigate. The general depth is from thirty to sixty feet. It receives the waters of the James, Potomac, Rappahannock, Susquehanna, and other streams. The chief cities on its shore include Baltimore and Annapolis.

CHESAPEAKE, The, an American vessel built in the early part of the 19th century, famous in the history of the American navy. She was repaired in the Washington navy yard in 1807 and put under command of Commodore James Barron, and with an untrained crew started on a cruise across the Atlantic. While en route, she was halted by the British frigate *Leopard*, whose commander demanded the return of British deserters who were supposed to form a part of the crew of the *Chesapeake.* Commodore Barron refused to permit his vessel to be searched, when the *Leopard* opened fire and killed three and wounded eighteen, after which the *Chesapeake* surrendered, and four of her crew were taken prisoners. England refused to make reparation when requested to do so by the American government, and the "Chesapeake Affair," as it became known, was one of the chief causes that led up to the War of 1812.

The *Chesapeake,* commanded by Captain James Lawrence, fought a battle in Massachusetts Bay with the British vessel *Shannon* on June 1, 1813. The latter was commanded by Captain Broke and had a trained crew. A terrific fire was kept up for fifteen minutes, when the *Chesapeake* was set on fire and surrendered. Lawrence was mortally wounded and exhorted his men with the words, "Don't give up the ship," which were adopted as the motto of the American navy. The *Chesapeake* had a crew of 379 and the *Shannon* had 330, while the former lost 61 killed and 85 wounded and the latter lost 33 killed and 50 wounded. The British took the *Chesapeake* to Halifax as a prize and fitted her up as a war vessel, but sold her for old timber in 1820.

CHESAPEAKE AND OHIO CANAL, a waterway completed in 1850, extending from Georgetown, D. C., to Cumberland, Md. It follows the Potomac River the entire distance, 184.5 miles, and serves as a means of transportation to Washington, D. C., where the Potomac becomes a tidal stream and is navigable for large ships. This canal is six feet deep and sixty feet wide, and has a lift of 609 feet by means of 74 locks. Much of its distance is paralleled by railways, but it is still used for the transportation of coal and other freight.

CHESS, a game played by two persons on a chessboard, which consists of eight rows of alternate light and dark squares, eight in each



CHESSBOARD.
Position of men at beginning of game.

row, a total of 64. It is played with two differently colored sets of men, 16 in each set. Each player has eight *pawns,* two *castles* or *rooks,* two *knights,* two *bishops,* a *queen,* and a *king.* The game is one of the oldest and most scientific amusements and is thought to have originated in India, whence it was brought by way of Persia and Arabia to Europe. It was made popular in America through Benjamin Franklin, who both played it and wrote in its favor. The first national congress of chess clubs was held in 1857, at which Paul Morphy of New Orleans was awarded the championship. The rules differ materially and are set out most completely in a work entitled "Chess Praxis," published in London, England, in 1860.

CHEST, or **Thorax,** in anatomy, the part of the human body which lies below the neck and above the abdomen. It consists of the upper portion of the trunk, to which are attached the breasts, the arms, and the shoulders. Within the cavity are the heart and lungs. The walls are composed chiefly of the ribs and the muscles attached to the ribs. The dorsal portion of the spinal column forms the back part of the chest, and the front is comprised of the sternum, or breast plate. In form it is conical, with the apex upward, and the neck connects it with the head. Inspiration takes place by air being drawn through the trachea, or windpipe, and the bronchial tubes, causing an extension, and during expiration the muscles contract and the diaphragm descends. Many of the most dreaded diseases affect the chest and the organs located within, including cancer, pleurisy, bronchitis, pneumonia, and consumption.

CHESTER (chĕs'tẽr), a city of Pennsylvania, in Delaware County, on the Delaware River, twelve miles southwest of Philadelphia. It is on the Baltimore and Ohio, the Pennsylvania, and the Philadelphia and Reading railroads. The chief buildings include the Pennsylvania Military College, the Crozer Theological Seminary, and the public library. The house of William Penn is an object of interest. It has extensive systems of waterworks, sewerage, and electric railways. The principal industry is shipbuilding, in which several thousand men are employed. Other manufactures are implements, machinery, clothing, cotton and woolen goods, and building material. It was settled by the Swedes in 1643, who named it Upland, and is the oldest city in the State. The name was changed to Chester under a charter of William Penn in 1699. Population, 1900, 33,988; in 1920, 58,030.

CHESTER, a city in England, capital of Cheshire County, on the Dee River, fifteen miles southeast of Liverpool. It is located on an elevated site made up largely of sandstone and is the focus of several important railways. Ancient walls about two miles in length and seven feet thick surround the city, which is entered by four gates. Chester was founded by the Romans, who cut the streets in solid rock from two to eight feet below the buildings, many of which are reached by flights of steps. A covered way for foot passengers called the "rows" is located in front of the second stories of the houses, which are used for shops. The chief buildings include a cathedral in the Norman-Gothic style and a castle founded by William the Conqueror. A fine stone bridge crosses the Dee. Several schools, a museum, a public library, and a theater are maintained. The manufactures consist chiefly of ironware, shoes, clothing, machinery, and sailing vessels. It has a large trade in cheese, produce, and merchandise. Among the public utilities are sewerage, gas and electric lights, and a system of rapid transit. Near the city is Eaton Hall, the splendid country seat of the Duke of Westminster. Population, 1921, 39,038.

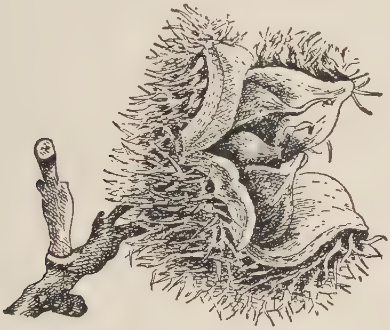
CHESTER, a city of South Carolina, county seat of Chester County, sixty miles north by west of Columbia, on the Southern, the Seaboard Air Line, and other railroads. It is surrounded by a fertile agricultural country. The manufactures include flour, cottonseed oil, machinery, and cotton goods. It is an important shipping point of cotton and farm produce. The chief buildings include several public schools and churches. Population, 1920, 5,557.

CHESTER, a port of entry of Nova Scotia, in Lunenburg County, forty-five miles southwest of Halifax. It is located on Mahone Bay, and is popular as a summer resort. The fishing industries supply a large revenue. It has manufactures of clothing and machinery. It was founded by people from New England in 1760. Population, 1921, 985.

CHESTERFIELD (chĕs'tẽr-fēld), a town of England, in Derbyshire, at the confluence of the Hipper and Rother rivers. It is twelve miles south of Sheffield, with which it is connected by railway and electric lines. The manufactures include lace, leather, earthenware, and machinery. Iron, coal, lead, and clay are mined in the vicinity. The public utilities include gas and electric lighting, waterworks, public baths, and two parks. It is the seat of several schools and has a number of fine churches, including the parish church of All Saints. King John reigned at the time the first charter was granted. Population, 1922, 27,860.

CHESTERFIELD, Philip Dormer Stanhope, Lord, author and statesman, born in London, England, Sept. 26, 1694; died March 24, 1773. He studied at Cambridge, where he excelled as a student, and made a tour of Europe in 1714. The next year he was appointed to serve the Prince of Wales as a gentleman of the bedchamber, and soon after was elected to the House of Commons. Subsequently he took an active part in the House of Lords, in which he became an ardent opponent of Sir Robert Walpole, then Premier. Later he was ambassador to The Hague, but was soon nominated Lord Lieutenant of Ireland, where he became exceedingly popular with the people. He was an intimate friend of Swift, Bolingbroke, and Pope, and offered his patronage to Samuel Johnson after the appearance of his dictionary. This caused the latter to write the famous letter in which Chesterfield was called "A wit among lords and a lord among wits." Among his writings are contributions to *The Craftsman* and *The World,* periodicals popular at that time, but the best known are his letters to his son. These letters are written for improvement in manners and have been highly esteemed for their mental and moral scope. They were published in several editions.

CHESTNUT, a genus of plants allied to the beech. A large number of species are found in the different continents, and three of the species are valuable for their nuts and wood. These include the *American,* the *European,* and the *Japanese* chestnuts. They grow to a height of 100 feet and bear ample and graceful foliage. The tree is widespreading and attains a great age, often many centuries. The leaves are smooth and green on both sides, and are pointed at the end. From two to five nuts are borne in a prickly sack. Chestnuts are prized as food among the peasants of Italy and Spain. The wood somewhat resembles oak, but is less valuable, and is used for house building and furniture. The nuts may be eaten raw, boiled, or roasted, and in some countries are ground into flour, which is used in making bread. In Southern Africa, the cape chestnut abounds, which belongs to the rue family, while in Australia a similar tree is known as the Moreton Bay chestnut, and resembles the American species. The horse-chestnut is a much different tree from the common chestnut, and the water chestnut is known as the water caltrop.


CHESTNUT: FRUIT AND BUR.

CHEVIOT HILLS (chĕv'vē-ŭt), a range of mountains in the counties of Roxburgh and Northumberland, stretching a distance of thirty-five miles on the boundary between England and Scotland. Cheviot Hill, altitude 2,660 feet, is the highest point. They are noted for the Cheviots, a superior grade of sheep. On these mountains many fierce battles were fought between the Scotch and English, the fame of which is commemorated in the Chevy Chase ballads.

CHEVY CHASE (chĕv'ĭ chās), the name given to an edition of early English ballads written in the reign of Henry VI., or between 1420 and 1461, which purport to describe the Battle of Otterburn, fought in August, 1388. They contain an account of the chase of the Earl of Douglas among the Cheviot Hills for the Earl Percy of Northumberland. Portions of the old manuscript are preserved in the Bodleian library at Oxford. See **Ballads.**

CHEYENNE (shī-ĕn'), the capital of Wyoming, county seat of Laramie County, on Crow Creek and on the Union Pacific, the Colorado and Southern, and the Chicago, Burlington and Quincy railroads. It is pleasantly located on the eastern slope of the Laramie Mountains, its altitude being 6,041 feet above sea level. The chief buildings include the State capitol, the Carnegie library, the post office, and the high school. It is the seat of the Soldiers' and Sailors' home and three miles south is Fort Russell, a United States military post. The industries include brickyards and railroad machine shops. It has gas and electric lighting, waterworks, sewerage, and a public park. The surrounding country produces coal, iron, and live stock, in which it has a large trade. It was first settled in 1867, when the Union Pacific was completed to this point, and became the capital of Wyoming in 1869. Population, 1905, 13,656; in 1925, 13,202.

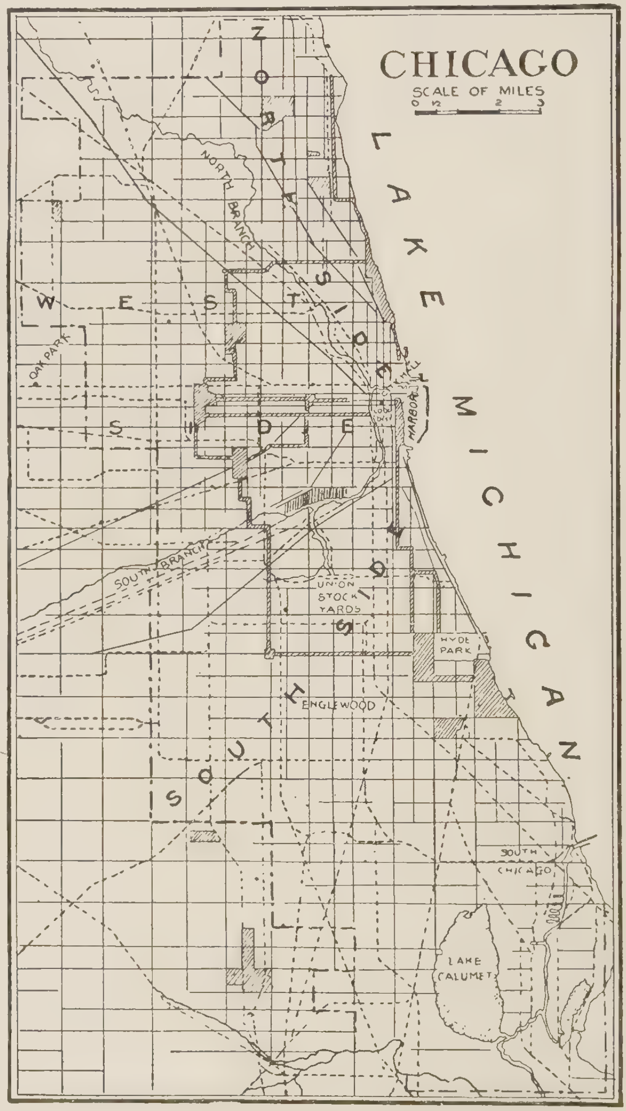
CHEYENNE INDIANS (shē-ĕn'), an Indian tribe belonging to the Algonquin family, who settled near the Black Hills before the beginning of the last century. They were first met with by Lewis and Clarke in 1803, and in 1825 a treaty of peace was made with them by General Atkinson. A portion of the tribe settled in Arkansas and here joined the Arapahoes, while the remainder carried on a war against the government in 1861. A battle was fought with them by Colonel Chevington on Nov. 29, 1864, at Sand Creek village, in which a hundred were slain. In 1867 their village was burned by General Hancock, and later General Custer engaged them in battle at Washita. The Indians remaining in the north were generally peaceful. At present they number 3,200, of which about 1,200 are in Arizona and 2,000 in Oklahoma.

CHIAROSCURO (kyä-rō-skōō'rō), the arrangement of light and dark colors in a work of art, such as a drawing or painting. It is important to distribute the lights and shadows of a picture in such a manner that the objects may be naturally and effectually relieved from one another, otherwise the product has the appearance of being unreal. Painters study this feature of art very carefully with the view of applying the force of colors so as to produce in art certain effects found in nature, especially in blending the lights and shadows. The term *chiaroscuro prints* is applied to the woodcuts or plates used in printing pictures of two or more colors, each cut or block being used with different-colored ink. The colored illustrations of books and magazines are printed generally with three sets of plates, the product being known as *tricolor work.*

CHICA (chē'kȧ), a dyestuff obtained in South America, used chiefly to give an orange-red color to cotton prints. It is obtained from the leaves of a species of begonia, native to the basin of the Orinoco and other sections. The dyestuff is obtained by boiling the leaves and was first used by the Indians for painting their bodies. The plant is a climber and has heart-shaped leaves and drooping clusters of flowers.

CHICAGO (shĭ-ka̤'gō), the largest interior city of North America, second in size on the Western Hemisphere, being surpassed in population only by New York City. It is located at the head of Lake Michigan, in Illinois, and is the county seat of Cook County. Through it flow the Chicago and Calumet rivers, both of which originally discharged into Lake Michigan, but the former is now a part of the Chicago Drainage Canal and carries a constant current out of the lake. The distance from Chicago to New Orleans is 914 miles; to Washington, 810 miles; to New York, 910 miles; and to the Pacific Coast, 2,415 miles.

DESCRIPTION. The city is located along the western shore of Lake Michigan, occupying territory from five to twelve miles wide and about twenty-five miles long. The area is about 210 square miles, all of which is remarkably level, elevated about 25 feet above the lake and 580 feet above the sea. It is separated by the Chicago River, which is formed within the city by the north and south branches, into three districts, known as the North Side, the West Side, and the South Side. The North Side is located north and east of the river, extending along the lake almost to Evanston; the South Side lies south and east of the river; and the West Side embraces all of the section west of the two principal branches of the river. Between Twelfth Street and the river, which embraces the northern part of the South Side, are the larger business establishments and within this area is located the chief business section. It has all of the great depots, except two, the Union and the Northwestern, both of which are on the West Side, near the Chicago River, and within it is the loop of the elevated railroad. Many factories and warehouses are in the southern part of the North Side, which also contains Lincoln Park and a large residence section. In the eastern part of the West Side are many warehouses and freight offices, and west of these are retail stores and shops, beyond which is an extensive section occupied by residences. Many bridges cross the rivers, including ample facilities for vehicles, street cars, and pedestrians.



The city is regularly platted and nearly all of the streets cross each other at right angles. Most of the streets are wide and some of the boulevards are exceptionally fine, having a width of 120 feet. Western Avenue and Halsted Street run north and south almost the entire length of the city. The streets aggregate about

5,000 miles, of which 2,500 miles are improved by paving, chiefly macadam and asphalt in the residence districts and brick and cobblestone in the business section. Rapid transit is almost entirely by electric lines, both surface and elevated, the former of which aggregate 1,500 miles of single track and the latter about 125 miles of double track. The elevated lines carry passengers north to Evanston, south to Sixty-third Street, and west to Oak Park, and the main lines have several branches, all of which center in the loop, which encircles the chief business district. The surface lines pass to all parts of the city and connect with many interurban railways, furnishing direct electric transportation to points in western Illinois, northern Indiana, and southern Wisconsin.

Chicago is the focus of many railroads. In 1850 the Galena and Chicago Union Railroad Company, now the Chicago and Northwestern, constructed about thirty miles of railway westward, while, in 1852, the Lake Shore and Michigan Southern was the first railway to enter the city from the east. Since then about thirty different railway lines have entered the city, penetrating in all directions and representing more than 150,000 miles of railroads. These are all connected by a belt line, which enables freight to be passed through the city without local transfer by drayage. Within the city are more than 1,500 miles of trackage. These railroad systems connect the great West and North with the South and East, and make Chicago the greatest railroad and grain center in the world, while its merchant marine service is constantly increasing. Fully 10,000 vessels arrive and depart from the Chicago docks annually. These include liners that communicate directly with the chief ports on the Great Lakes and indirectly with European and other foreign commercial centers.

Sewage and Water. The site of the city is perfectly level, hence its drainage was long a question of much concern to the city authorities. The grade of the streets was raised from ten to fifteen feet, and the buildings were constructed in conformity with these grades in the principal portions of the city. In 1890 the Legislature of the State formed a drainage district in Chicago, whch provided for the construction of the Chicago Drainage Canal, extending from Lake Michigan to a point near Lockport, a distance of twenty-eight miles, where it connects with the Illinois River and by it reaches the Mississippi. By means of this canal the fresh water flows from the lake through the city and carries the sewage entirely out of the municipality.

The city supply of water is obtained through tunnels from Lake Michigan. These tunnels extend from two to four miles from the shore, where the cribs, or intakes, secure uncontaminated water. The water is pumped through the tunnels, which are located at different points in the city, whence it is forced through the mains that carry it direct to the consumers. Both the waterworks and the electric-light plant are operated by the municipality.

Parks. The parks cover an area of about 4,750 acres and are connected by wide boulevards. Seven of the parks, which number about forty, are of considerable size, and in addition there are many playgrounds to accommodate the children who are not near the parks. Sheridan Road is one of the many boulevards and extends north beyond Evanston. Among other noted boulevards are Michigan Avenue, Jackson Boulevard, Diversey Avenue, and Lake Shore Drive. The entire system of boulevards includes 165 miles of thoroughfares, most of which are lined on both sides by splendid residences. Drexel and Garfield boulevards are beautified by flowers and ornamental shade trees. Washington Boulevard extends west and is one of the main thoroughfares. South Shore Drive extends south from Jackson Park.

Lincoln Park includes 320 acres and is one of the attractions of the city. It has fine gardens, conservatories, fountains, and a zoölogical collection. The statues in this park include those of Lincoln, Grant, Schiller, Linnaeus, La Salle, Shakespeare, Franklin, and Hans Christian Andersen. Among the noted busts are those of Goethe, Beethoven, and Garibaldi. It has an equestrian statue of Grant. Near the western part of the park is located the Academy of Sciences. At Oakwoods Cemetery is a Confederate monument, in Humboldt Park is the Humboldt Monument, in Union Park is the Police Monument, and in Monument Square is the Douglas Monument. The site of Fort Dearborn is marked by a tablet at the end of Michigan Avenue.

Jackson Park, the site of the World's Columbian Exposition, is the chief park on the South Side. It has an area of 524 acres and extends along the lake front. It is beautified by many lagoons and driveways, and within it was the Field Columbian Museum. The Midway Plaisance, a tract of eighty acres, extends from Jackson Park westward past the grounds of the University of Chicago to Washington Park. The latter is noted for its many species of trees and flowers. Douglas Park, Humboldt Park, Union Park, Jefferson Park, and Garfield Park belong to the west park system. The system of parks is under the control of several boards of commissioners appointed by the Governor of the State.

Buildings. In the heart of the city, bounded by Clark, Adams, and Dearborn streets and Jackson Boulevard, is the Federal Building, which is sixteen stories high and was completed in 1903 at a cost of about $5,000,000. Besides the post office, it contains the customhouse, the United States court, and a branch of the National treasury. The city hall and courthouse building covers an entire block and is used jointly for city and county purposes. The Chamber of Commerce, a structure thirteen stories high, is in the French-Gothic style, and the Masonic Temple, twenty-one stories high, is one of the finest buildings of the kind in America. Among the many fine office buildings may be mentioned the Manhattan, the Monadnock, the First National Bank, the Old Colony Building, the Tribune Building, the Rand-McNally Building, the Federal Reserve Bank Building, and the Wrigley Building. Many of the retail stores are structures of much convenience and beauty, such as those of Marshall Field and Company, Mandel Brothers, and the Fair Store. The Auditorium, on Michigan Avenue and Congress Street, was erected at a cost of $3,750,000. It has a tower 225 feet high, contains a theater with a seating capacity of 4,050, and within it is a large hotel, which, with the Congress Hotel, on the south side of Congress Street, furnishes accommodations for many patrons. The Municipal Pier furnishes vast docking facilities.

Chicago is noted as a musical center and has many prominent places of amusement. Among the theaters are the Auditorium, the Garrick, the Studebaker, the Illinois, the Powers, the Blackstone, the Chicago Theatre, and Cohan's Opera House. The Majestic Theater Building, one of the highest in the city, contains the Majestic Vaudeville. Others of this class include the Olympic and the Haymarket. The Coliseum is used for political conventions and exhibitions, and the Orchestra Building is the seat of a noted musical society. Among the clubs are the Illinois, Chicago, Aero, Calumet, Athletic, Iroquois, Bankers, Standard, and Union League. The chief hotels include the Auditorium, Palmer House, Great Northern, Stevens, Congress, Atlantic, Drake, Morrison, Virginia, Lexington, La Salle, Blackstone, and Sherman House. The Virginia and the Drake, on the North Side, and the Chicago Beach, on the South Side, are family hotels.

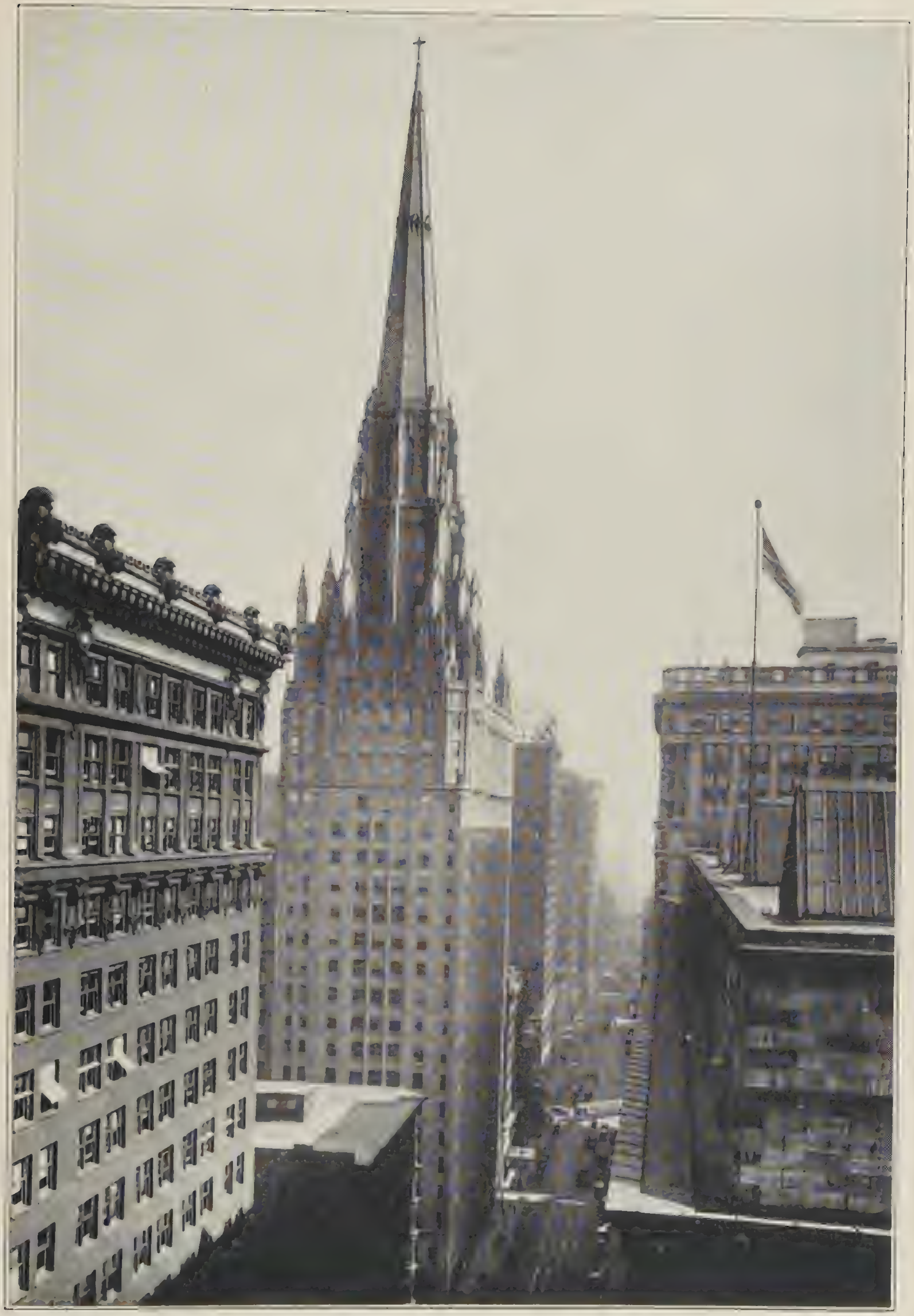
Few cities are better supplied with fine churches than Chicago. The Cathedral of Saint Peter and Saint Paul is a fine Protestant Episcopal place of worship, and the Roman Catholics have the Cathedral of the Holy Name, which is their finest ecclesiastical edifice in the city. Other churches of note include the Plymouth (Congregational), Church of Christ (Christian Science), First Unitarian, Second Presbyterian, and Chicago Temple (Methodist).

Education. The public schools furnish ample facilities for the instruction of youth and courses are maintained from the kindergarten to the high school, with which is affiliated the Chicago Normal School. Manual training is given to boys of the 7th and 8th grammar grades, and girls of the same classes receive instruction in household arts, such as cooking and sewing. The city has 25 high schools and about 300 graded schools, and in addition there are many private and parochial schools. Besides English, the courses offer instruction in Latin and German. Higher instruction is given in the University of Chicago, located near Jackson Park; the Northwestern University (Methodist), at Evanston, whose dental, law, and medical schools are within the city; Saint Ignatius's College (Roman Catholic); Lewis Institute; Armour Institute; Chicago Lutheran Seminary; Western Seminary; and McCormick Seminary. The Chicago Music College and the Art Institute are representative institutions. About 1,500 students are enrolled in the latter each year for the study of painting, sculpturing, and modeling.

The charitable institutions are very numerous. They include the Cook County Hospital, the largest in the city; the United States Marine Hospital, one of the largest of its kind in America; the Presbyterian Hospital; the Hospital of the Alexian Brothers; the Women's Hospital; and the Saint Luke's and Saint Joseph's hospitals. The Armour Institute of Technology, maintained as a memorial to Joseph Armour, affords excellent instruction in religious and industrial training. Hull House, modeled after Toyndee Hall, London, is a social settlement located in the Ghetto district on the West Side. Other settlements of this kind include the West Side, the Chicago Commons, the Northwestern University settlement, and the University of Chicago settlement. The Bureau of Hebrew Charities, the Chicago Bureau of Justice, and other similar organizations do worthy work among the poor and for the protection of wage-workers. Many nurseries, asylums, reformatories, and relief societies are maintained by the city and by societies.

Libraries. Three great libraries are maintained, including the public library, the John Crerar Library, and the Newberry Library. The public library was founded in 1872 and has about 1,475,000 volumes. It is located in the public building erected on Michigan Avenue, which is finished in Sienna and Carrara marble and is ornamented with glass mosaics and fine sculptures. The John Crerar Library, named from its founder, was endowed with a bequest of $2,500,000 and has 550,000 volumes. It is located in temporary quarters and will eventually be housed in the south part of the city. The Newberry Library was endowed by Walter L. Newberry, who bequeathed about $2,000,000 to establish it. It contains about 480,000 volumes, mostly works of general reference. Other libraries of note are those maintained by the University of Chicago, which has about 700,000 volumes; that of the Chicago Law Institute; that of the Chicago Historical Society; that of the Field Columbian Museum; and that of the Chicago Academy of Sciences.

Commerce and Industry. Various causes contributed to the phenomenal development of Chicago, and promoted its speedy rise to the position of the greatest interior city and market



(Opp. page 554) CLARK STREET, CHICAGO, LOOKING SOUTH

Here we see the great buildings on one of the busy streets, including a view of Chicago Temple, the Methodist Episcopal Church combined with offices. It is located at the corner of Clark and Washington streets, is 21 stories high, measures 569 feet from the foundation to the top of the cross, which is illuminated at night electrically. The building was erected at a cost of $5,000,000.

of America. Its location on Lake Michigan and the construction of the Michigan and Illinois Canal caused the first material growth. This canal, constructed in 1836-48, is no longer an important link in transportation, having served its purpose until the great railways were built and the navigation of the Great Lakes was fully organized. Chicago ranks next to London, New York, and Antwerp as a commercial port, measured by the tonnage of vessels that carry trade. Lumber is the largest lake import, and corn represents about half of the value of the exports, while wheat is the next item. In live stock and grain Chicago takes precedence over all other markets. It is noted for its trade in coal, being a distributing center for the coal fields of Illinois, and it receives a large tonnage of iron ore, which is smelted within the city or in suburbs near by. Butter, cheese, machinery, merchandise, fruit, and hardware are handled in large quantities. Chicago is a center of wholesaling and jobbing, and supplies the retailers of many cities with wares and merchandise of different kinds.

In manufacturing enterprises Chicago takes high rank. The establishments of this kind employ about 300,000 workmen. Meat packing and slaughtering, confined largely to the South Side, represents an industry of vast proportions and gives employment to about 26,500 workmen. Associated with this enterprise are the manufacture of by-products, such as leather, candles, and soap. It has extensive machine shops and foundries, which turn out hardware and agricultural implements of various kinds. Among the large factories are the Deering Harvester Works and the McCormick Harvester Works, now controlled by the International Harvester Company. Other manufactures include textiles, furniture, brick, clothing, chemicals, and tobacco. It has an enormous output of books and printed matter, including many daily, weekly, and monthly periodicals. The jobbing and wholesale trade is centered on Franklin and Market streets and Fifth Avenue.

HISTORY. Chicago is thought to have been named from an Indian word meaning wild onion, a plant found abundantly in the locality. Marquette and Joliet stopped in the vicinity in 1673, and the region was afterward visited by La Salle and Hennepin. Jean Baptiste Point de Salle, a refugee from Haiti, is supposed to have built the first log hut on its site, in 1779. John H. Kinzie came across the lake from Saint Joseph in 1803 and was the first permanent settler. In 1804 the government erected a stockade fort near the mouth of the Chicago River and named it Fort Dearborn. At the beginning of the war with Great Britain, in 1812, the government ordered the fort abandoned. It was destroyed soon after by the Indians, but was rebuilt in 1816. In 1832 it contained a dozen families, and on August 10 of the next year twenty-eight voters organized the town. It was incorporated in 1837 with a population of 3,497.

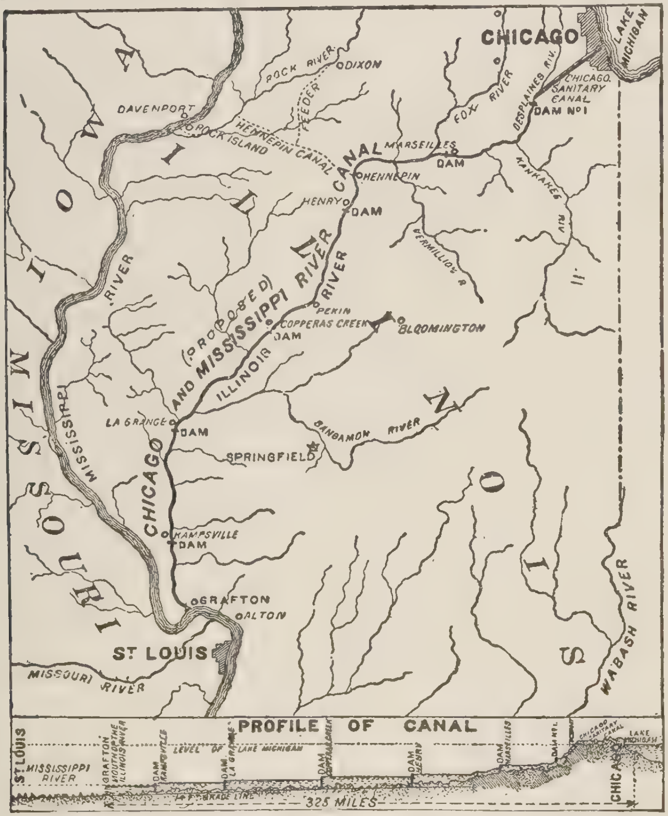
In October, 1871, Chicago was visited by a great fire, which burned 17,500 buildings, covering 2,500 acres, and 100,000 persons were made homeless. The property destroyed represented a value of nearly $200,000,000. The work of rebuilding began immediately after the fire, the new structures comprising some of the finest and most substantial buildings in the world. The frontage was made uniform and the streets were widened and improved in various localities. Many substantial fireproof buildings, from 10 to 20 stories high, the frames being of steel, were erected in place of those consumed by the flames. Railroad riots occurred in 1877, when United States troops were called to quash the disturbances, and in 1886 occurred the Haymarket riots in consequence of labor troubles. The World's Columbian Exposition was held in Chicago in 1893, and the Chicago Drainage Canal, begun in 1892, was completed in 1900.

Many inhabitants of Chicago are of foreign birth. The Poles number more than 135,000 and exceed any other class. Next in numerical order are the Germans, Russians, Swedes, Irish, Italians, and Bohemians. Other nationalities more or less strongly represented include the Jews, Russians, Arabs, Turks, Armenians, and Negroes. The following census reports give an idea of the rapid growth of the city, which, in 1910, had a population of 2,185,283, and in 1920, 2,701,705.

YEAR.	POPULATION.	YEAR.	POPULATION.
1840	4,470	1860	150,000
1845	12,080	1865	187,446
1848	20,035	1870	298,977
1850	28,260	1875	410,000
1852	38,733	1880	503,304
1853	60,652	1890	1,099,850
1855	83,509	1900	1,698,575

CHICAGO DRAINAGE CANAL, a canal in the State of Illinois, constructed primarily to furnish a means of disposing of the sewage of Chicago. It connects the south branch of the Chicago River with the Des Plaines River, a tributary of the Illinois River, at Lockport, Ill. The sewage was formerly discharged into Lake Michigan, but by the construction of this canal the flow of water was reversed, and a strong current now passes by means of the Chicago River and the canal to the Des Plaines, whence the water passes to the Illinois River and through it to the Mississippi.

Work was begun on the canal on Sept. 3, 1892, and it was formally opened on Jan. 28, 1900. It begins at the west fork of the south branch of the Chicago River, at Robey Street, and extends to Lockport, a distance of 28.05 miles. The controlling works are at Lockport, where a basin sufficiently wide permits vessels to turn, and below Lockport is a tailrace 6,500 feet long by which the water is carried to the Des Plaines River. A bear-trap dam and sluice gate control the flow of water, which has sufficient fall to be used profitably for power to propel electrical machinery. The canal is 160 feet wide at the bottom and from 175 to 300 feet at the top, and the minimum depth is 22 feet. Its capacity is 300,000 cubic feet per minute. The total cost to Jan. 1, 1908, was $42,500,000. The canal is sufficient to carry large steamboats to the Des Plaines River, and it is designed to improve this stream and the Illinois River sufficiently to permit large boats to pass from Lake Michigan to the Gulf of Mexico, a project supported enthusiastically by all the states of the Mississippi valley.


CHICAGO
LAKE MICHIGAN
CHICAGO SANITARY CANAL
DAM No 1
DESPLAINES RIV.
FOX RIVER
ROCK RIVER
DIXON
FEEDER
DAVENPORT
ROCK ISLAND
HENNEPIN CANAL
MARSEILLES
DAM
HENNEPIN
HENRY
DAM
KANKAKEE RIV.
VERMILLION R.
IOWA
ILLINOIS
MISSOURI
(PROPOSED) CHICAGO AND MISSISSIPPI RIVER CANAL
ILLINOIS RIVER
PEKIN
COPPERAS CREEK
DAM
BLOOMINGTON
MISSISSIPPI RIVER
LA GRANGE
DAM
SPRINGFIELD
SANGAMON RIVER
KAMPSVILLE
DAM
GRAFTON
ALTON
ST LOUIS
MISSOURI RIVER
WABASH RIVER
PROFILE OF CANAL
ST. LOUIS
MISSISSIPPI RIVER
GRAFTON MOUTH OF THE ILLINOIS RIVER
DAM KAMPSVILLE
LEVEL OF LAKE MICHIGAN
DAM LA GRANGE
DAM COPPERAS CREEK
DAM HENRY
DAM MARSEILLES
DAM No 1
CHICAGO SANITARY CANAL
LAKE MICHIGAN
CHICAGO
GRADE LINE
325 MILES

Map and Profile of Proposed Chicago–Mississippi River Canal.

CHICAGO, University of, an institution of higher learning in Chicago, Ill., located between Jackson and Washington parks. It was opened as a Baptist institution in 1857, but through lack of funds closed its doors in 1886, and its success is due to systematic efforts made by the American Baptist Educational Society, through whose influence several large endowments were obtained. The largest of these was given by John D. Rockefeller, who made a gift of $600,000, and later added to this sum, the total of his bequests amounting to about $34,700,000. Other benefactors include Marshall Field, Silas B. Cobb, Julius Rosenwald, Charles T. Yerkes, F. H. Rawson, Martin A. Ryerson, and Anne Hitchcock. Nearly all the buildings, about 25, were erected almost entirely from private donation and have a value of $18,801,083, excluding the grounds and equipments. The endowments aggregate $35,303,567. At Geneva Lake, Wis., about 75 miles from Chicago, is the Yerkes Observatory, which is one of the buildings of the university. The library is the best in Chicago and has about 700,000 volumes.

Five departments are embraced in the university, those of the university press; schools and colleges; libraries, laboratories, and museum; university extension; and the university affiliated schools. A term of 12 weeks is the unit, instead of the scholastic year as is the case in many institutions, and the year is divided into four quarters of 12 weeks each. Students may take up or drop work at the beginning of any term, and a degree is given at the completion of the requisite number of courses, computed by units. University work is organized into the two departments known as *junior* and *senior,* the former corresponding to that done in most institutions by freshmen and sophomores, and the latter to that of the juniors and seniors. Degrees are granted to students who complete courses in the senior colleges of the university, and those who graduate from the junior colleges receive the degree or title of *associates* in the arts, science, or philosophy. Lecture and study courses are given outside of Chicago, and a systematic line of work is done in correspondence courses, which are arranged according to the regular university schedule, and those who do the work receive credits toward degrees. Many publications are issued by the university press. It had 12,492 students in 1926.

CHICAGO HEIGHTS, a city of Cook County, Illinois, 30 miles south of Chicago, on the Chicago and Eastern Illinois and other railroads. It has extensive manufactures of brick, stoves, shoes, harness, pianos, and machinery. The place is well improved and has many fine houses and other buildings. Population, 1920, 19,653.

CHICKAHOMINY (chĭk-ȧ-hŏm'ĭ-nĭ), a river in Virginia, rises about twenty miles northeast of Richmond, and after a course of seventy-five miles flows into the James River.

The marshy portions of its valley are often overflooded during extensive rainfalls. The river banks were the scene of severe conflicts during McClellan's compaigns in June, 1862, against Richmond. Among the battles of that year were those of Seven Pines, Fair Oaks, Mechanicsville, Savage's Station, Cold Harbor, and White Oak Swamp. In 1864 the second Battle of Cold Harbor occurred in its proximity.

CHICKAMAUGA (chĭk-ȧ-ma̤'gȧ), a small stream that rises in Georgia and flows into the Tennessee River, about six miles above Chattanooga, Tenn.

CHICKAMAUGA, Battle of, an important battle of the Civil War, fought on Sept. 19 and 20, 1863, on Chickamauga Creek, in Tennessee. The Union Army consisted of 55,000 men under command of Gen. Rosecrans and the Confederates, of 70,000 under Gen. Bragg. Chattanooga was the objective point, of which both armies were endeavoring to hold possession, owing to its location as the outlet to the fertile countries to the south and its railroad lines, which were valuable to both the contending parties. The Confederates made an effort to secure the road to Chattanooga and fell back to the Chickamauga, where they received reinforcements and were deployed for battle. The left wing of the Union army was commanded by Thomas, the second by Crittenden, and the last by McCook.

The Confederates crossed the Chickamauga on Sept. 19 and struck Thomas's line. The latter speedily returned the assault, thereby confusing Bragg's plans. A second attack was made on Thomas the following day, but he held his position and was frequently reinforced. Owing to a misunderstanding of an order by Gen. Wood, the Confederates attacked a weak point in the Federal lines and the day was lost. The Union army retreated to Chattanooga and held that point, thus making the victory at Chickamauga of no particular value to the Confederates. The Union loss was 16,000, while the Confederates lost 18,000. Gen. Thomas distinguished himself by making a brave defense and covered the retreat, owing to which he was called the "Rock of Chickamauga."

CHICKASAW BLUFFS (chĭk'ȧ-sa̤), **Battle of,** a battle that occurred near Vicksburg, Miss., Dec. 29, 1862. While conducting the siege of Vicksburg, Gen. Sherman sent a strong force up the Yazoo River with the design of attacking the city on the rear, from the south. At Chickasaw Bluffs, located opposite the Chickasaw Bayou, the force was confronted by Confederate batteries and rifle pits. The Union force charged and reached the works, but was driven back by heavy fire, and the project was abandoned. The Confederate losses were slight, but the Union forces lost 1,800 men.

CHICKASAW INDIANS, an Indian tribe of America which inhabited a region between the Mississippi River and the Appalachian Mountains. They were friendly to the English in several wars against the French, and in 1739 made a treaty with Gen. Oglethorpe. By a treaty in 1786 their territory was fixed with a boundary including the Ohio River on the north and extending into the State of Mississippi. In the Indian wars of 1793 they aided the United States against the Creeks. Early in the last century a number located in Arkansas. In 1818 they ceded the lands east of the Mississippi and located in Indian Territory, now Oklahoma, while the last of the tribe ceded their lands in 1834. In the Civil War they sided with the Confederacy and lost several leaders and their slaves. They long lived under the same government with the Choctaws, who speak a common language, but separated from them in 1855. They are now governed locally by a senate, a house of representatives, and a governor. Education has been beneficial to them, many showing much advancement in scholarship and the arts. Their lands are held in common. The number of Chickasaws in 1908 was about 6,000, but many are mixed with the blood of whites and Negroes.

CHICKASHA (chĭk'ȧ-sha̤), a city of Oklahoma, in the Chickasaw nation, 40 miles southwest of Oklahoma City, on the Saint Louis and San Francisco and the Chicago, Rock Island and Pacific railroads. It is surrounded by a fertile farming country. The manufactures include brick, cotton-seed oil, flour, furniture, machinery and artificial ice. It has a brisk retail and wholesale trade in merchandise and produce. The chief buildings include a number of fine schools and churches. It has modern utilities, such as electric lights and waterworks. Population, 1900, 3,209; in 1920, 10,179.

CHICKERING (chĭk'ẽr-ĭng), **Jonas,** manufacturer, born at New Ipswich, N. H., April 5, 1797; died in Boston, Mass., Dec. 6, 1853. After securing a common school education, he was apprenticed to a cabinet maker. In 1818 he was employed by a piano manufacturer in Boston, and in 1823 began the manufacture of pianos on a small scale. His business prospered until he produced annually 2,000 instruments. The factory burned in 1852, and his death occurred before the new one was completed. The Chickering pianos are known world-wide, and have furnished numerous improvements to the musical world. For many years the establishment was the most extensive in the world.

CHICO (chē'kō), a city in Butte County, California, about ninety-five miles north of Sacramento, on the Southern Pacific Railroad. It is surrounded by an agricultural and mining country and is an important shipping point. The chief buildings include the public library and a State normal school. Among the industries are lumber mills, iron works, and flouring mills. Deposits of gold and other metals occur in the vicinity. Population, 1900, 2,640; in 1920, 9,339.

CHICOPEE (chĭk′ô-pê), a city of Massachusetts, in Hampden County, four miles north of Springfield, on the Boston and Maine Railroad. It is centrally located in a fertile region, on the Connecticut River, and has extensive electric railway connections. Among the notable buildings are a public library of 25,000 volumes and a number of educational institutions. Among the manufactures are rifles, bicycles, cotton and woolen goods, carpets, and machinery. The streets are paved and improved by waterworks, sewerage, and parking. The early growth of Chicopee is due to an abundance of water power derived from the river. It was settled in 1675 and incorporated in 1848. Population, 1905, 20,187; in 1925, 41,882.

CHICORY (chĭk′ô-rȳ), or **Succory,** a plant cultivated in various parts of Eurasia and America. It thrives best in soil mixed with gravel and chalk. The roots are roasted and used as a substitute for coffee, and are often mixed with genuine coffee. The roasting is done in iron cylinders that are kept revolving as in the roasting of coffee. Butter or lard is added during the roasting process, from which it receives a luster and color similar to coffee. Its presence in coffee can be detected by a magnifying glass and by placing the mixture in cold water, the coffee floating on the surface and the chickory becoming discolored and sinking.

CHI-HOANG-TI, Emperor of China and builder of the great Chinese wall. He ruled from 246 to 210 B. C., united the eight kingdoms into the great Chinese Empire, and organized it on a strong military and civic basis.

CHIHUAHUA (chê-wä′wȧ), a city of Mexico, capital of a state of the same name, 225 miles south of El Paso, Tex., on the Mexican Central Railway. It is located on the Chihuahua River, at an elevation of about 4,650 feet, and is surrounded by mountains. The streets are regularly platted and many are paved with stone and macadam. Within the public park is a fine monument erected to Hidalgo and the revolutionists of 1810. The manufactures include carpets, brick, cotton goods, and machinery. It has fine gardens of roses and fruit trees and fruits thrive in the vicinity. The surrounding country has rich gold and silver mines. Population, 1907, 30,905; in 1920, 39,061.

CHILBLAIN (chĭl′blān), an inflammation of the skin and cellular tissue, caused by sudden alterations of temperature. The affection appears as a small patch of reddened skin, sometimes swelled and painful on pressure, and in extreme cases is accompanied by ulceration and superficial gangrene. It most frequently attacks the foot and sometimes the face, due chiefly to frostbites. Persons liable to chilblain should avoid the fire when their feet are cold and damp, and relief may be obtained by bathing the cold parts with alcoholic or other stimulating liquids.

CHILD, Lydia Maria, authoress, born in Medford, Mass., Feb. 11, 1802; died in Wayland, Miss., Oct. 20, 1880. After receiving a common school education and other training, she became a teacher in the seminary at Medford, and later organized a private school at Watertown, where she taught for four years. Her father was a baker named David Francis, and she married David Lee Child in 1828. Her first novel was written at the age of seventeen years. In 1841 she became editress of the *National Anti-Slavery Standard,* of New York, on which her husband became editor in chief. In the Civil War she helped the freedmen, aided in supporting the schools for Negroes, and formed public sentiment by writing letters and publishing articles in papers. Among her best known productions are "The Rebels," "History of Women," "Facts and Fiction," "Letters from New York," "Progress of Religious Ideas," and "Looking Toward Sunset."

CHILDREN, Societies for the Prevention of Cruelty to, an organization instituted by Henry Bergh in 1874. He established the first society of the kind in the world in the City of New York. It was incorporated in 1875, with John D. Wright as president. The enterprise was encouraged financially by Elbridge T. Gerry and G. Fellows Jenkins. From this organization originated 160 American and forty foreign societies, located in the principal cities of the world. The number of complaints received in a single year aggregates 8,500, of which a number are prosecuted and convicted, while more than 5,500 children are rescued and relieved from destitution annually. The work is a most beneficent one and is filling a valuable mission in the large cities, where children are often subjected to vicious treatment and surroundings. The most important foreign society is one organized by Benjamin Waugh in London, Aug. 26, 1889.

CHILDS, George William, publisher and philanthropist, born in Baltimore, Md., May 12, 1829; died in Philadelphia, Pa., Feb. 3, 1894. He was a shopboy in a store in Philadelphia, and at the age of eighteen set up in business for himself. In 1850 he entered the firm of R. E. Peterson & Co. He purchased the Philadelphia *Public Ledger* in 1864 and made it a journal of much importance. His object was to conduct a refined and reliable family newspaper, which could be circulated in the family home and in it fill a refining and educational mission. He established a sanitarium for aged printers at Colorado Springs, and was instrumental in founding other charities. At Stratford-on-Avon, England, he erected a Shakespeare memorial fountain, placed stained glass windows in Westminster Abbey in commemoration of Herbert and Cowper, and collected art treasures and autographs. His "Recollections" were published in 1890.

CHILD STUDY, the study of children, a branch of educational work considered of importance to all who have charge of the training of infants and youth. It is a subject which, especially in recent years, has very greatly engaged the attention of practical educators, and those who have either written or spoken on questions concerning the present condition and future prospects of society. Courses of study and rules of treatment are not prepared with the view of being fitted to serve the needs of the individual child, but rather to meet the general requirements of the average person. Hence, it is incumbent upon the instructor to so apply them that growth, both mental and physical, will be the most rational and best fitted to the individual to be trained. Child study embraces, not only an investigation of the physical capability and powers, but comprehends child psychology, one of the branches of general psychology. Attention to this department of learning was first given in Germany, where the teachers and phychologists studied it as a necessary department for those engaged in the training of children.

The educational movement to promote child study in America had its beginning in 1880, and it is now generally incorporated in the educational systems of the various states of the United States and the provinces of Canada. Much has been done by the educational associations and teachers' institutes along this line, since the topic has been made one for discussion and addresses on the program of these organizations. It is in the courses of many normal training schools, where young teachers are instructed in the care and treatment of children. In many of these institutions classes of children of different ages are organized, and those who study for the teachers' profession are thus furnished a practical opportunity to learn of the habits of children and the proper manner of disciplining them.

Child study is concerned with every phase of training youth. It embraces a study of all the elements of character,—physical, mental, and moral. There are propensities to restrain and subdue as well as powers to bring out and direct. The teacher must know what there is in character to repress or extinguish, and what tendencies toward good are to be cultivated and encouraged. It is necessary to know the dispositions, the likes and dislikes, both in play and work. During the period of adolescence, which begins at about 14 and continues in females until 22 and in males until 24, the youth passes through a critical period of life and requires more than ordinary sympathy and encouragement. At all times it is necessary to direct youth to self-control, patience, kindness, industry, and the many other virtues that make up a well-rounded character, and this is done by stimulation and direction rather than by the infliction of punishment or by severe reprimands. Above all, it must be observed that all children can never properly be subjected to precisely the same processes of education, because their natures are very different, hence the need of pursuing the subject of child study in all of its phases.

CHILE (chē'lå), a republic extending along the Pacific coast of South America, from south latitude 17° 57′ to Cape Horn. It is from 68 to 250 miles wide, with an average width of 87 miles, and is about 2,700 miles long, including all the territory in the southern extremity of South America except the eastern half of Tierra del Fuego, which belongs to Argentina. The northern boundary is formed by Peru, the eastern by Bolivia and Argentina, and the southern and western by the Pacific Ocean. The area is given at 290,895 square miles.

DESCRIPTION. Chile has a very narrow coast plain, which is confined to certain localities, and the land rises in most places quite abruptly from the sea. Near the sea is an elevated region known as the Coast Cordillera and along the eastern boundary trend elevated chains of the Andes, pierced at many places by deep fiords that extend to the plains of Argentina. The Andes are highest in the northern section, where they reach altitudes of about 15,000 feet, and in the southern part the ranges vary from 3,500 to 6,000 feet in height. Aconcagua, located northeast of Valparaiso, chiefly in Argentina, has a summit of 23,080 feet. The loftiest summits wholly in Chile include Cerro del Mercedario, 22,000 feet, and Tupungato, 23,000 feet. Many of the summits are extinct volcanoes, whose peaks are covered with snow the entire year.

The Andes forming the continental divide, Chile has few rivers suitable for navigation. The Maule, which flows into the Pacific near south latitude 35°, is navigable for small craft. Other rivers located farther south include the Biblio, Imperial, and Bueno, all of which are navigable for small boats. In the northern part are a number of deserts where rainfall is very scant, sometimes at intervals of six months or a year. These include the deserts of Atacama and Tarapacá, both located north of south latitude 32°. A number of lakes are situated in the vicinity of south latitude 40°, of which Lake Llanquihue is the largest, and in the region south of these lakes are many islands. The coast in the northern section is very regular, but in the southern part are numerous inlets, including Gulf del Corcovado, Gulf de las Peñas, and Gulf de Trinidad.

The climate ranges from the tropical in the north to the cold region in the southern part. Much of the coast has a climate similar to California, with average temperatures in low altitudes at 65° in the north and 40° in the extreme south. The warmest section is along the coast, whence the temperature falls toward the elevated inland. Rainfall is most abundant in the vicinity of the Strait of Magellan, where it reaches about 130 inches, and decreases toward the north, where the coast has less than eight inches and parts of the interior are practically destitute of precipitation.

Flora and Fauna. Vegetation is most abundant in the vicinity of 40° south latitude, where the flora is always green and plants grow luxuriantly. Here thrive the cypress, beach, and palm, but plant life decreases toward the south on account of cold and toward the north as rainfall diminishes. The plateaus are well grassed and sage brush and cacti abound in the arid regions. Among the chief forest trees of Chile, besides those already mentioned, are the poplar, oak, chestnut, willow, and eucalyptus. The mammals include the puma, otter, fox, guanaco, pudu deer, and chinchilla. Birds of song, prey, and plumage are very abundant and are represented by the buzzard, parrot, owl, crane, condor, hawk, humming bird, and many varieties of water fowl. The reptiles include lizards, frogs, and snakes. The coastal waters are rich in marine life, such as fish, seal, whale, and dolphin.

Mining. Many useful minerals abound in Chile, which ranks as one of the chief mining countries of South America. Tarapaca, one of the provinces acquired from Peru, has an inexhaustible supply of nitrate deposits. They are worked chiefly by Europeans, employ about 65,000 men, and yield 3,500,000 tons annually. Copper is mined in the provinces of Atacama and Coquimbo, which yield about five per cent. of the world's production. Gold and silver ores are found in paying quantities, and bituminous coal is mined quite extensively in the southern part. Other minerals worked more or less include tin, borax, lead, and borate of lime. Iron, cobalt, mercury, zinc, and alabaster are found in small quantities.

Agriculture. Farming is confined chiefly to the central valley, where the land is held in large estates by the wealthy classes. About half of the people are engaged in agricultural pursuits, but much of the work on the extensive estates is done by the natives. Modern farming machinery is imported and utilized in cultivating the soil and harvesting the crops, and the land not occupied is located in the section of country where the climate is unfavorable, or the rainfall is insufficient. Wheat, maize, and barley are the most important crops. The vine is cultivated extensively for the manufacture of wine, and hemp and flax are grown for their seed and fibers. Apples and pears are exported. Other crops include potatoes, tobacco, alfalfa, and garden vegetables. All the domestic animals common to North America are grown in Chile, though special attention is given to cattle raising. Goats are reared in the mountains and sheep in the central valley. Oxen are used extensively for farm work.

Commerce and Manufacture. Commerce with foreign countries is chiefly with Great Britain, Germany, and the United States in the order named. The exports somewhat exceed the imports. The former include cereals, fruit, nitrate of soda, and live stock, and the imports consist chiefly of clothing and iron and steel manufactures. Comparatively unimportant as a manufacturing country, Chile is making advancement in building up industrial enterprises under the influence of Europeans, especially the large German settlement at Valdivia. Among the enterprises are sawmills, tanneries, breweries, shipyards, soap works, and shoe factories. The first railroad was built in 1852, when a short line was completed between Copiapó, the capital of Atacama, to the port of Caldera. Another line was built between Santiago and Valparaiso in 1858. The total railway mileage in 1923 was 5,100, of which about half was operated by the state. In that year the country had 12,500 miles of telegraph lines.

Education. Public instruction is provided by the state, but the schools are not in a progressive condition. The immigration of Germans has caused many teachers to be brought over from Germany, and many of the schools have been reorganized on a modern plan. The elementary and graded schools are supported by local districts, under the inspection of supervisors, and a state university is maintained at Santiago. This institution has departments of medicine and pharmacy, fine arts, political science, and physical and mathematical sciences. Other institutions maintained by the states or nation include the schools of agriculture and mining, normal schools, naval and military academies, and an academy of painting and sculpture.

Inhabitants. The native races of Chile are classed with the Araucanian tribes. About one-fourth of the native-born inhabitants are of Spanish origin, and those of foreign birth, in the order named, are Spaniards, French, Germans, Italians, English, and Peruvians. The language is purely Spanish and Roman Catholic is the state religion, but other denominations are respected and tolerated. Santiago, the capital, is the metropolis and chief commercial center. Other cities of importance include Valparaiso, Concepción, Talca, Iquique, Chillán, Serena, Antofogasta, and Quiron. The population is about twelve to the square mile, a ratio much greater than that of Brazil and Argentina. Population, 1922, 3,750,120.

Government. The government is a democratic republic, under a constitution adopted in 1833. It guarantees equal political rights to all citizens, freedom of instruction, inviolability of property, and the right of petition. The executive power is vested in a president, who is chosen by popular vote for a term of five years. He is assisted by a council of state of eleven members, of whom five are nominated by himself and six by congress, and by a cabinet of six ministers, who preside over the departments of the government. A national congress, consisting of a senate and a house of representatives, has general legislative authority. The senators are elected for six years and the representatives for three years, the former by the provinces on the basis of one senator for each three representatives, and both are chosen by popular vote. The supreme judicial power is vested in a high court of justice with its seat at Santiago, and the lower courts are distributed among the districts and provinces. It has a standing army of 21,000 men, and all male citizens between the ages of 20 and 40 constitute the national guard.

HISTORY. The country was first visited in 1520 by Magellan, the famous Portuguese explorer, after sailing through the strait that bears his name. Formerly the northern portion belonged to the Incas of Peru, from whom it was conquered by Pizarro and Almagro in 1535, while the southern portion was occupied by the Araucanian Indians, and was not conquered until a comparatively recent date. Santiago was founded in 1541 and has since been the most important center of European influence. Chile remained a Spanish colony until 1810, when a revolution was organized under the direction of Gen. San Martin, and after seven years it became independent, but Spain did not recognize the government until in 1844. Chile joined Peru in a war against Spain in 1865, which terminated in the blockade of the coast and the bombardment of Valparaiso, and peace was not concluded until 1871, when a provisional treaty was signed at Washington, D. C.

In 1879 Chile declared war on Bolivia and Peru on account of the mineral district of Atacama, with the result that Chile was victorious and added to her territory the provinces of Tarapaca and Antofogasta. An insurrection took place in 1891, owing to a quarrel between President Balmaceda and the congressional government, which resulted in the defeat of the former and brought on several wholesome reforms in the government. In this military disturbance the United States took sides with the president, which caused much ill feeling, and when the steamship *Baltimore* landed her crew was attacked by a mob. This caused serious complications between the two governments, but the authorities apologized and paid $75,000 damages for the benefit of the injured soldiers. Since then the country has had no revolutionary disturbances, but war with Peru was threatened in 1925 because of conflicting claims to the region known as Tacna-Arica. The matter was settled in 1929, when Arica was transferred to Chile and Tacna to Peru.

CHILLAN (chêl-yän′), a city of Chile, 120 miles northeast of Concepción. It is situated about 700 feet above sea level, near the Itata river, and has railway connection with the principal cities of Chile. The chief buildings include a normal school and a Franciscan missionary church. Southwest of the city are sulphur baths. The city was founded in 1579 and was destroyed by an earthquake, but was rebuilt in 1835. It has a growing trade and is in a prosperous condition. Population, 1918, 35,500.

CHILLICOTHE (chĭl-lĭ-kŏth′ē̇), county seat of Livingston County, Missouri, eighty miles northeast of Kansas City, on the Wabash, the Chicago, Burlington and Quincy, and the Chicago, Milwaukee and Saint Paul railroads. It occupies a gently undulating site and is surrounded by a fertile farming country. Among the chief buildings are the public library, the State industrial home for girls, the high school, and a business school. It has manufactures of flour, clothing, cigars, and machinery. The streets are lighted with electricity and many are paved with brick. It was settled in 1835 and incorporated in 1845. Population, 1900, 6,905; in 1920, 6,772.

CHILLICOTHE, a city in Ohio, county seat of Ross County, on the Scioto River and the Ohio Canal. It is on the Norfolk and Western, the Baltimore and Ohio Southwestern, and the Cincinnati, Hamilton and Dayton railroads. The manufactures include carriages, tile, machinery, implements, furniture, and paper. A public library, the courthouse, numerous churches, and fine schools are among its many institutions. Gas and electric lighting, street railways, pavements, and waterworks are the chief public utilities. The city was incorporated in 1802. Population, 1900, 12,976; in 1920, 15,831.

CHILLON (shē̇-yôn′), a celebrated castle and fortress of Switzerland, in the canton of Vaud. It is situated on Lake Geneva and is remarkable for its scenic beauty. The castle was built by Amadeus of Savoy in 1238. Byron made "The Prisoner of Chillon" the subject of a celebrated poem.

CHILOÉ (chē-lō̇-ȧ′), an island and province of Chile. The island and a number of others are included in the province. The area of the island, including about 100 islets, is 3,995 square miles. It has fertile soil and vast forests, which furnish large quantities of lumber for exportation. San Carlos, or Ancud, is the chief seaport. Chiloé was discovered in 1558. Population, 1922, 98,764.

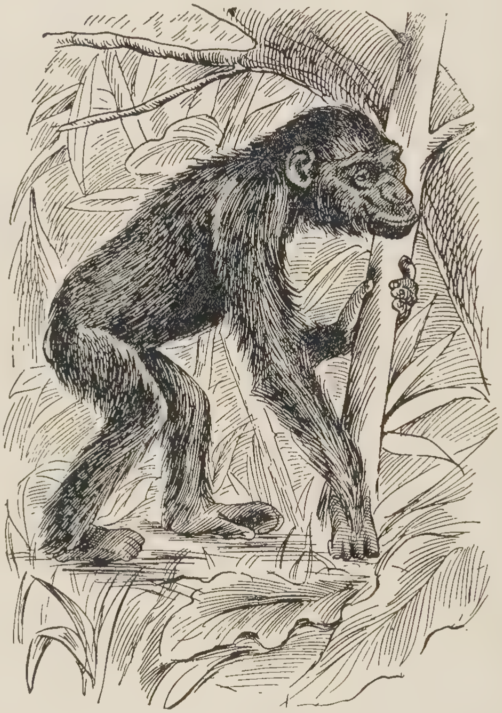
CHIMAERA (kī̇-mē′rȧ), in Greek mythology, a three-headed, fire-breathing monster. The fore part of the body was that of a lion, the hind part that of a dragon, and the middle part that of a goat. Each of the three heads resembled that of one of the three animals. This monster was killed by Bellerophon. Sculptures of it have been discovered in Lycia, and it is said that the finest representation is the large bronze in Florence. The term *chimaera* is applied figuratively to unnatural or idle fancy.

CHIMBORAZO (chĭm-bō̍-rä′zō̍), a mountain about ninety miles from Quito, in Ecuador. It has an altitude of 20,703 feet above sea level. Nearly 2,500 feet of the slope from its summit downward is covered with snow perpetually. E. Whymper was the first to ascend to the top, which he did in 1880.

CHIME (chīm), a number of bells attached to each other in a diatonic succession, and used to produce chimes by means of hammers, which are moved by a mechanism or by clockwork. They are used in church towers and elsewhere. The number of bells employed is not less than five, usually nine, but often much larger. The first chimes were made in 1487 at Alost, Belgium. Pianoforte music may be played on some of the chimes, but the fist instead of fingers is used to strike the keys. The Trinity Church, New York City, has one of the oldest chimes in America.

CHIMNEY (chĭm′nȳ), an erection designed for the passage, from buildings and various structures, of the smoke of a furnace or fire to the open air. Chimneys were not built to any extent before the 13th century. The smoke was emitted from the house or structure through an open hole in the roof, and this was covered with a board or some other protection in the evening. They are now constructed of brick or stone, and in the better classes of buildings extend from the basement through the floors and the roof. An opening in the basement serves for cleaning purposes, while openings in the various apartments permit the admission of pipes from stoves or furnaces. Many of the newer chimneys have a double passage, one for the smoke and the other for ventilation purposes. The tendency of the smoke to pass upward is due to the differences in the weight of the heated air in the chimney and an equal volume of cold air on the outside, the colder pressing the warmer upward. In early times stovepipes constructed of sheet iron were in general use and similar pipes or smokestacks are now used in the larger factories and machine shops. The chimney in a residence usually passes from five to seven feet above the ridge of the roof. This arrangement serves as a protection against fire and increases the draft, which depends largely upon the height of the structure. The opening for smoke in the average chimney is about twelve inches square, and that for ventilation is about the same, but in general it varies with the number and size of the stoves or furnaces from which the smoke passes through the chimney into the open air.

CHIMPANZEE (chĭm-păn′zē̇), a name formerly given to several large man-shaped apes, but more properly to the native ape of the equatorial portion of Western Africa. It is closely associated with the gorilla. The face is almost hairless, the skin is yellowish, the teeth are beautifully white, and the hair is long and black. The arms are longer than the hind limbs, and, when the animal stands erect, they reach below the knee. The height of a full grown chimpanzee is about five feet, and its structure is much like that of a human being. It moves about freely in an erect position, is gentle in habit and amiable in disposition, and easily makes friends. The brain is about half the size of a human brain. It lives in forests, where it feeds on fruits, though it also robs the gardens of the natives. Its habitation is largely in the branches of trees, in which it constructs a sort of nest and rears its young. The habits of the adult in the native state are not well known, but in captivity they have been thoroughly studied. The first accounts given of a chimpanzee were written by Hanno, who left Carthage in 470 B. C. to explore the northwestern part of Africa.

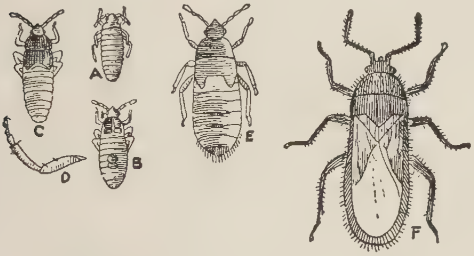


CHIMPANZEE.

CHINA SEA, an extension of the Pacific Ocean along the southeastern coast of Asia. It is divided by Formosa into the East China Sea and the South China Sea. The East China Sea is bounded on the north by the Yellow Sea and Korea, east by Japan and the Riu Kiu Islands, south by Formosa, and west by China. The South China Sea is bounded on the north by China and Formosa, east by the Philippine

Islands and Borneo, south by Borneo and the Java Sea, and west by Anam and the Malay Peninsula. The China Sea is important in the commerce and the political questions of the East. Upon its waters ply some of the largest war and commercial ships of the world. Among the fortified cities on its coast are Bangkok, Canton, Hong Kong, and Singapore. The Mekong, the Menam, and the Si-Kiang rivers flow into it.

CHINCH BUG (chĭnch), a small pestiferous insect, about three-sixteenths of an inch long. The wing covers are white, with black spots, and the body is dark brown. Its eggs are deposited in the ground in the spring and hatch about the first of June. The young insects are very destructive to wheat, barley, rye, and other cereals, and move from these grains into fields of growing corn, which they injure by sapping the juices from the stalk and roots. They produce two broods in a year, one in early summer and one in autumn. Their liability to take infectious diseases has led to a means of destroying them in wheat fields, and until this discovery was made their destruction was almost impossible. The plan of destroying large swarms of them is to infect several insects artificially with a disease and place them among the swarms; thus the disease will spread very quickly and largely destroy them. Cinch bugs occur most commonly in the wheat fields of the Mississippi valley and the great plains of North America, and thrive best in dry seasons.



A, Newly hatched larva; *B*, Larva after first molting; *C*, Larva after second molting; *D*, Leg of perfect insect; *E*, Pupa; *F*, Adult insect.

CHINCHILLA (chĭn-chĭl'lȧ), a small squirrellike animal, native to the higher regions of Chile and Peru and to the great plains of South America. These animals are rodent in habit, have long hind legs, soft gray hair, and a bushy tail, and the body is about a foot or fifteen inches in length. They feed on herbs and the roots of plants. The fur is used for muffs, tippets, and other articles of ornamental apparel.

CHINESE REPUBLIC, or **China**, an extensive national domain of Eastern Asia, comprising China proper and the dependencies of Mongolia, Tibet, East Turkestan, Jungaria, and Manchuria. It comprises nearly one-fourth of Asia and one-twelfth of the land area of the globe, and is the third largest country in the world. The area is estimated at 4,277,170 square miles. It is irregular in outline and lies between latitudes 18° and 54° north and longitudes 74° and 135° east. The boundary on the north is formed by Siberia; on the east by Siberia, Korea, the Yellow Sea, East China Sea, and South China Sea; on the south by Indo-China and India; and on the west by Russian Turkestan. Its southern shore is indented by the Gulf of Tonkin and its eastern by the Gulf of Pechili. South of it is the island of Hainan, separated from the mainland by the Strait of Hainan. The extent of the empire from east to west is about 3,000 miles and from north to south, 2,400 miles.

Description. The republic of China consists mainly of highlands, characterized by plateaus and mountain ranges, except along the coast and in the valleys of its great rivers. It is separated from Siberia by lofty highlands, known as the Altai and Tian Shan mountains, from which ranges extend westward through Mongolia and finally disappear in the desert plateau of the Gobi. The Tibetan Plateau extends along the western part, and much of the southwestern boundary is formed by ranges of the Himalayas, which rise to heights of over 20,000 feet and are crossed by a number of difficult passes. All of the mountains of southeastern China belong to the Tibetan tableland, which is cut up by many great ridges and peaks. The Kuenlum Range occupies most of the western section. Many of the mountain systems are interspersed by extensive and fertile valleys, but the west central portion is largely of desert formation, embracing the Tarim Desert, with the Desert of Gobi stretching toward the northeast.

Drainage. Much of the surface slopes from the west toward the east and southeast, and the drainage of the northern part is toward the northeast. A large part of Mongolia is drained by the Amur and its tributaries, and Manchuria is entirely in the Amur basin. The great Yangtse-Kiang River rises in the western part by a number of branches, flows toward the east, and discharges into the Yellow or North China Sea. Other important rivers flowing east include the Hoang-ho and the Si-Kiang. The Selenga River flows north and discharges into Lake Baikal, Siberia, while the extreme northwestern section is drained by a number of rivers that have no outlet to the sea. The southwestern portion is drained by the Salwin and the Mekong, which flow toward the south. Many of the rivers are important as avenues of transportation and the valleys are densely populated. China has few lakes and all are comparatively small. Near the east central part is Lake Tung-ting-hu, which is drained by the Yangtse-Kiang. In the northwestern part are a number of lakes that have no outlet to the sea, including Shara and Loo, both of which receive the discharge from several rivers.

CLIMATE. The climate of China is very similar to that of the central part of North America, being largely temperate. In the northern portion, bordering on Siberia, it is cold; throughout the interior it is temperate; and in the southern portion it is warm and tropical. At Pekin the mean annual temperature is 51° and at Canton it is 69°, while the summer heat at the former ranges from 85° to 100° in the shade. At Canton the temperature is greatly modified by the monsoon winds, but in the interior the climate is continental and the range of temperature much greater. The rainfall is excessive on the southern coast, where it averages 100 inches annually. At Hongkong the rainfall is 90 inches and at Pekin, 24 inches, and in the northwestern part is a vast extent of territory that has little rain. The southwest monsoons bring most of the rains, and local droughts occur in seasons when these winds do not blow to the average extent. Disastrous typhoons sweep across the country periodically and cause much loss of life and property in many sections of the southeastern part.

FLORA AND FAUNA. China has a vast variety of plants useful in the arts and trades. Above all, it is the home of the rice, tea, and bamboo plants. The first furnishes its most important article of food; the second, its drink; and the third, material useful in providing implements and constructing habitations. Fine forests abound in the mountains, but the populous regions have been cut over and the land has been improved for cultivation. Among the forest trees are the cypress, pine, cedar, banyan, camphor, palm, and a number of hard woods. The mulberry is cultivated to promote silk culture, and many varieties of fruits abound, including the orange, banana, mango, and pineapple.

Many wild animals are still abundant in vast tracts of country that are sparsely populated. Over 700 species of birds have been described. In the southern part many ferocious animals abound, including the panther, tiger, leopard, wildcat, rhinoceros, and black and brown bears. In the same section are many species of bats and monkeys, and tapirs and elephants are not uncommon. The northwestern part has the musk deer, muskrat, badger, weasel, and otter, and great swarms of locusts often migrate and do much damage. The coastal waters are rich in eels, porpoises, sharks, finwhales, and sturgeons. The reptiles are represented by snakes, frogs, turtles, and alligators.

MINING. All of the valuable minerals are found in the empire. Deposits of commercial coal are thought to extend over an area of 400,000 square miles, but it is mined only in a few localities. Bituminous coal is mined in Pechili and several other eastern provinces, and beds of anthracite occur in eastern Shansi. Gold is obtained in the auriferous quartz veins of Pechili and Shantung, and is washed from the sands of the Amur and other rivers. Rich deposits of copper occur in Hunan and Yünnan and iron ore is mined in Shansi. Salt is obtained from artesian wells at a depth of 1,500 feet, the brine being evaporated over furnaces in which natural gas is used as fuel. Petroleum and natural gas are obtained in several fields. Other deposits worked more or less include tin, quicksilver, silver, kaolin, and building stone. The absence of adequate transportation facilities and Chinese prejudice against using modern implements are the chief causes of a lack of development in mining to the extent of its possibilities.

MANUFACTURING. China is noted for its extensive manufactures, but the products include rather fancy and small articles than the larger wares, such as are common to America and Europe. The Chinese train early in life to secure efficiency in labor and the manual arts. Their silk manufacture is the chief industry along the line of manufacturing, and in the production of silk they excel in varieties and quality all other nations in the world. A high degree of mechanical skill and artistic taste is displayed in the embroidering of silk. Cotton and woolen goods are beginning to meet with favor for wearing materials, and are, to some extent, displacing silk, which is the favorite fabric for clothing and is prescribed for officials and people of high rank. The Chinese knew of movable types in printing before the time of Gutenberg and Koster, and were the first to invent clocks, paper, porcelain, gunpowder, the magnetic needle, silk textiles, jade, and the art of printing. They are skilled in carving, engraving on wood, bronze-casting, lacquer work, and weaving. They support many factories for making matches, brick, powder, steel and iron ware, and munitions of war. Modern machinery has been introduced within the last few decades and all the industries are passing through a period of transition.

AGRICULTURE. China is distinctly an agricultural country, and has developed much skill in the care and cultivation of the soil. The art of fertilizing and securing the greatest possible productiveness has been a matter of special attention among the agricultural classes, and it is the policy of the government to promote and encourage this necessary department of husbandry. In theory the farmer ranks next to the scholar, and is looked upon as being superior to the artisan and merchant. The farming season is inaugurated annually at the spring equinox by the emperor, who sows some seed in a newly turned furrow. The land is held in small estates, usually not over ten acres, and when a man ceases to cultivate his land it becomes the property of the emperor. Crops have been rotated since time immemorial, and the cultivation is done with the utmost skill and care, hence, a failure of crops is very rare. Lowlands are drained and protected from floods by embankments, while fertile soil is transported to the barren hills to render them productive. A network of canals and ditches is utilized in irrigating the land, even where rainfall is ordinarily sufficient, thus insuring abundant moisture at the critical time of plant development.

Farming is developed most extensively in the southeastern part of the empire, especially in the fertile valleys of the rivers. Rice is the staple crop and is grown in the southern and middle parts. Tea is cultivated in the southeastern section, where it yields three crops per year, in April, July, and August. Comparatively little rice is cultivated north of the Yangtse-Kiang River, except on the southern slopes of the hills. The cotton belt extends as far north as the Hoang-ho River, where it is grown chiefly in the low valleys, while farther south it receives more attention and produces a larger yield. Sugar cane is confined chiefly to the provinces bordering on the China Sea. Wheat, oats, corn, buckwheat, and rye are grown principally in the northern part. Tobacco is a staple crop in all parts of the empire, and the cultivation of the poppy is a commercial enterprise owing to the prevailing habit of opium smoking. The mulberry tree is cultivated more than any other on account of its value in silk culture, and ginseng, indigo, and vegetables receive careful attention. Stock raising is not an extensive enterprise, for the reason that butter, milk, and cheese are practically unknown. Fish and eggs are preferred to the flesh of domestic animals, and the horse is little used for driving, being considered less desirable than the men who pull the jinrikisha. Camels, elephants, and buffalo are reared to a considerable extent.

COMMERCE. The tendency to exclusion has caused China to be closed against the commerce of the world, hence its commercial relations with foreign countries is of comparatively recent date. A trading port was established by the Portuguese in China in 1522 and some trade was carried by the Dutch, the English, and the Americans, but the government remained hostile to foreigners and trade continued to be of secondary importance. Special ports were opened to foreign commerce in 1842 by the Treaty of Nanking, which was made shortly after the Opium War with England, and up to 1908 forty-two ports were opened, including a number located on the rivers several hundred miles inland. The import trade greatly exceeds the exports. The former includes chiefly flour, ginseng, kerosene, cotton textiles, quicksilver, sago, rubber shoes, and machinery, while the exports consist principally of tea, hemp, essential oils, fans, mats, chinaware, silk products, bamboo ware, and hides. Foreign trade is principally with Great Britain, Japan, the United States, and Germany in the order named.

TRANSPORTATION. The rivers and canals of China still continue to be the chief highways of commerce, and these are peculiarly busy with boats and barges of all kinds. A vast volume of trade is carried inland by these means, whence it is distributed to remote sections by carts and other vehicles drawn by hand or by animals, such as the horse, elephant, and buffalo. The Grand Canal, a waterway 700 miles long, connects Tientsin with Hankau, and has been in use more than 800 years. Many railroads have been projected and surveyed by foreign corporations, but railway construction is slow on account of hostility of the government, and partly because of the impossibility to construct them without going through numerous burial grounds, which is precluded by the ancestor worship of the Chinese. The total railroad mileage in 1918 did not exceed 8,500 miles, including the lines built through Manchuria by the Russians. The projected lines are one from Kiauchau to Pekin by a German corporation, one from Canton to Hankau by an American company, and several branches to extend from the lines at Port Arthur and from Pekin to Canton.

SPHERES OF INFLUENCE. A number of nations have secured trade concessions in different parts of China. This was brought about from the fact that the Chinese support customs which are opposed to the methods employed in modern business enterprises, hence the establishment of spheres of influence permit intercourse on a commercial basis decidedly advantageous to the commerce of the world. The oldest European possession is that of the Portuguese, who leased the city and island of Macao, at the mouth of the Canton River, in 1586, subject to an annual payment, and it was ceded in sovereignty in 1863. Hongkong, the mountainous island at the mouth of the Canton River, was ceded to Great Britain in 1842, and subsequently a number of other islands were added so the district has an area of 405 square miles. Germany acquired a district of 200 square miles on the Shangtung coast, known as Kiaochau, in 1898, and built railroads from this point inland to the Poshan coal mines, which are controlled by German capital. France secured a concession of 230 square miles on the east side of the peninsula of Lienchou, including the town of Lienchou-fu, in 1898. Russia had the largest sphere of influence in Manchuria prior to the Russo-Japanese War, after which it was ceded to Japan with certain limitations.

RELIGION. Five religions are well established in China. These include the Confucians, Buddhists, Taoists, Mohammedans, and Christians, represented numerically in the order named. Anciently the Chinese divided their worship between God and their ancestors, and this double worship is embodied in the religion of Confucius, who laid stress upon the material side of life rather than upon the spiritual. It has gone through many changes, is the religion of the educated classes, and is the basis of society and government. Buddhism is on a decline, its priests are illiterate, and its monks and nuns are mendicants. However, monasteries and Buddhist temples are common in all parts of China, though those who profess it are of the uneducated class. Taoism is a system of rationalism, which makes an impersonal first principle the parent of all things, and it teaches that man must aspire to realize this principle through an escape from all mental distraction. Its worship is intermixed with incantation and alchemy, and partakes of a kind of spirit worship. The Arabs introduced Mohammedanism and their religion received state recognition. It is estimated that fully 20,000,000 Chinese profess the Moslem faith, and the mosques are numerous and usually in good condition. It is thought that Christianity was introduced in the 6th century by the Nestorians, but little progress has been made by either the Protestant or Roman Catholic missions. Those who profess Christianity are largely pupils of the missionaries or their descendants, and the total body of Christians does not exceed 1,500,000.

Education. The Chinese hold education and literary attainment in high repute, and among them illiteracy is looked upon almost as a vice. While these people differ in their religion and personal likes and dislikes, they make education the element that binds them together as a nation, and with their educational skill they have been able to endure through history longer than any of the nations of the world. The ability to obtain and hold an office is looked upon as a great personal attainment, and fitness for public positions is determined by competitive literary examinations, a system which has been in force nearly seventeen centuries. All the villages and towns have elementary schools, and the teachers are made up largely of a class who were rejected in the examinations for public positions. Technical education is provided for at the naval and military schools and at Pekin is located the Tung-wen College, in which science, literature, and modern languages are taught. Chinese newspapers are published chiefly in the ports within the sphere of foreign influence. The Chinese language contains only words of one syllable, and each word in print is represented by a character, hence there are as many characters as there are words in the language. It is thought that these symbols originated from the hieroglyphic characters of very ancient times. These characters are represented or printed in vertical columns to be read from top to bottom.

Inhabitants. The Chinese have a yellow complexion and belong to the Mongolian race, which embraces more than one-third of the population of the earth. Their eyes and eyebrows turn upward at the outer extremities, the hair is straight and black, and the forehead is wide. In stature they are low and have small feet and hands. Beginning in the 6th century A. D., the feet of the women of the higher classes were bandaged so as to prevent them from developing to the normal size. The men wear a braid or *queue* on the crown of the head, with the rest of the head shaved closely. They are accustomed to hard work, are free from most vices, and live at a small expense. Opium smoking, gambling, and the consumption of intoxicating beverages are national vices. They are strongly attached to their home, support their families by hard toil, and respect old age and their parents. Remarkable simplicity of manners is exhibited by the inhabitants of the interior who have not come in contact with foreigners, but those acquainted with the customs of foreigners are treacherous and untruthful in dealing with strangers.

China has a style of architecture distinctively her own, the best types of which are found in her temples and public buildings. The culture of the silk worm is left almost entirely to the women, while the men pursue agriculture, the arts, the professions, and laundry work. Death is regarded the most important event and marriage has precedence as of second importance. Both sexes marry young under contracts made by parents or professional matchmakers, and frequently the future bride and groom do not become acquainted until immediately before the wedding ceremony. Women are not accorded the same social or educational advantages given to men, and in the scale of society are considered of less importance. People in destitute circumstances are permitted to put their female children to death, but child murder is practiced very little, though millions of children die each year from a peculiar treatment of the sick, which prescribes that a child that does not respond to remedies is to be regarded as unhuman and for that reason is passed through an ordeal of neglect or starvation. The board of rites is a department of the government at Pekin, and interprets the Li-King or Book of Rites, which has been the basis of all rules of etiquette and conduct for more than 3,000 years, and any action that departs from it is looked upon as treason or impiety.

The great mass of Chinese live in houses built one story, and in the construction use brick, thatch, or bamboo, with the roof made of wood or tiling. Chambers are set aside for the worship of ancestors in all of the better class of dwellings, in which religious ceremonies take place regularly. They have many festivals and holidays, but regard New Year's Day as the greatest of all, for which they make preparation by paying their debts and purchasing new clothing, and it is considered the birthday of everybody, no matter on what day of the year birth took place. The dress has many advantages, since it is graded according to the season, and both sexes aim to have garments of the same kind, the only differences being in the footwear. They do not shake hands or kiss each other, but are free in congratulating and saluting. Every Chinaman has an ambition to be buried properly, hence a handsome coffin is looked upon as a very desirable present, and very often caskets are kept in the home for years so as to have them ready when needed. White is the color put on by mourners.

POPULATION. Few foreigners make their home in China. The total number of foreign birth, in 1923, was 18,850, and they resided chiefly in the treaty ports. They included principally British, Japanese, Russians, Americans, Germans, French, and Portuguese. However, the Chinese are widely distributed in every civilized and uncivilized country, and emigration would undoubtedly be much larger, if these people were welcome in the countries of America. Though China has many great cities in a general sense, they are not centers of population like those known to Europeans, since they resemble aggregations of people in a locality rather than cities of social and commercial enterprise. Nanking, the capital, is located in the east central part. Other cities are Peiping, Canton, Tientsin, Hankau, Shanghai, Ningpo, Chefoo or Chifu, and Fuchau. The population is not accurately known and the most recent careful estimates place it at 409,775,000.

GOVERNMENT. The government is not centralized like those of Europe, but the Chinese are held together by social, religious, and educational systems rather than by political force. It has a constitution which holds the provinces together as a confederation, under which the president is the chief executive and has supreme direction of affairs, with the assistance of a cabinet of ministers of state. Six ministers comprise the cabinet, two of whom are Chinese, two are Manchu, and two are chosen from the great college. The cabinet has control of seven government boards or administrative departments, as follows: the board of civil appointment, of revenues, of military, of public work, of admiralty, of rites and ceremonies, and the high tribunal of criminal jurisdiction. Each province has a governor and each district a magistrate, and between the president and the provincial governors is the viceroy. A number of the provinces are united to form districts, of which there are ten or twelve, and communication between the capital and the province is mainly through the viceroy and the governor. The laws are an outgrowth of custom through many centuries rather than direct legislation, and were repromulgated with various modifications when the dynasty was changed. In theory the emperor was the son of Heaven, but he could be deposed by the people if his reign became unwise or wicked, and if such a change was brought about by a rebellion it was said to have been willed by Heaven. The late Manchu dynasty belonged to a clan of conquerors numbering about six million people. Now the president and vice-president both are elected for a term of five years. Legislative power is vested in a national assembly or parliament of two houses. The senate has 274 members and the house of representatives has 596.

Manchu generals have charge of the military forces, which consist of 170,000 men quartered in the larger cities. The war footing is 600,000. Modern rifles and cannons have been imported from Europe and are manufactured in China, but the army still uses the bow and arrow to some extent, and the firearms in use by the cavalry consist of many different kinds of weapons. The navy has little strength compared to those of European nations, but the empire has forty forts and batteries that are armed with high-power guns. The government maintains a system of mail service, though this is inadequate to the needs, and telephone and telegraph lines are used extensively.

LITERATURE. The literature of China is the most extensive national literature of the world, its collection of writings extending over an epoch of 2,000 consecutive years. Among the early writings are those of Confucius, the most eminent of early moralists, but there are fragmentary writings that date from about the same time, these being counted among the Chinese classics. The histories are reckoned the most elaborate Chinese works, these being divided into dynasties, each containing an elaborate account of a dynasty. Chinese literature embraces a large collection of biographies of noted statesmen and scholars, a feature quite important in a country where ancestry worship prevails. In connection with each history are elaborate chronologies giving the lineage of important personages, many of which are of little interest and are seldom consulted. However, there are important treatises on law, music, the rights of property, food, and clothing, astronomy, geography, language, and various arts and sciences. One of the most elaborate works is a record entitled "General Examination of Records and Scholars," in which are recorded important details relating to official service and tests of scholarship.

Though the historians and general writers of China are largely men, the poets include numerous women writers. "The Book of Poetry," a classic coming down from Confucius, is a work on poetry held of very high importance, and those desiring official preferment are required to be acquainted with its contents. Chinese poetry as a whole is made up of elegies, ballads, and songs, some of them possessing real intrinsic value, though others are of minor importance. The Chinese writings of greatest utility are those relating to the culture of the tea plant and the mulberry tree, those treating of engraving, pottery, medicine, and horticulture, and those bearing on the subject of legislation and the industries. Other writings include essays, elegies, orations, legends, and works relating to Buddhism, alchemy, mechanics, and the drama, and numerous treatises of an encyclopaedic nature. Many libraries were destroyed at different times, particularly by the Tsin dynasty, and at the time of the conflict between the Boxers and the allied armies in 1901. It is to be observed that the Chinese used paper as early as the 1st century of our era, and that they were the first to employ movable types, which they invented about the 8th century A. D.

HISTORY. The early history of China is wrapped in fable, beginning in 2635 B. C., though it is reasonably certain that the country was densely populated even before that time. It is thought that Fu-hi, who lived about that period, founded the social order of the Chinese. Confucius begins his record of Chinese history with the reign of Yao, in 2357 B. C., and praises him as the founder of civilization and prosperity. The Chow dynasty organized the government in 1122 and reigned by a succession of kings until 255 B. C., a period of about 900 years, during which the fine arts and literature flourished. Confucius was born in 551 B. C., at a time when the nation was depressed by misrule and civil war. The Chow dynasty was overthrown by the Tsin or Chin dynasty, in 255 B. C., from which China was named, and its rulers expelled the Tartars, abolished the feudal system, and built the great wall to protect China against invasion. Prince Cheng, one of the Tsin rulers, regarded a national hero of the Chinese, assumed the title of emperor, calling himself Che-Hoang-ti. He beheaded hundreds of scholars who supported feudalism and claimed sovereignty over all the nations of Eastern Asia.

The Han line of rulers reigned from 206 B. C. until 190 A. D. Within this period many Jews settled in China, Buddhism was introduced and competitive examinations as a qualification for office became established. Genghis Khan and the Mongols overran China in the early part of the 13th century. They established a Mongol dynasty in 1259, but this was displaced by the Ming dynasty in 1368, when Hung-wu became the reigning sovereign. The latter dynasty was succeeded by the Manchu-Tartar dynasty in 1618, and through a line of descent still holds the throne. The first accounts published in Europe of the Chinese and their industries were from the pen of Marco Polo, who traveled in that country in the 13th century. Queen Elizabeth attempted to establish trade relations through the East India Company in 1596, but commercial intercourse of noteworthy extent did not take place until 1792. China declared the opium traffic illegal in 1796, but the decree was not enforced until 1837, when the government decided to suppress this traffic and sent commissioners to Canton to confiscate the opium in the possession of merchants. These officials seized the stores of opium and published an edict that vessels engaged in the traffic would be subject to confiscation and the persons who engaged in it were declared punishable by death. This brought on the Opium War of 1840, which terminated favorable to the British, and they compelled the opening of the five ports at Amoy, Canton, Ningpo, Fuchau, and Shanghai and the payment of an indemnity of $21,000,000. Four years later commercial treaties were made with France and the United States.

A formidable insurrection occurred in southern China in 1850, known as the Tai-ping rebellion, which was finally put down by an army raised at the expense of the merchants at Shanghai. This army was first commanded by an American named Ward and later by Charles George Gordon. In the meantime additional trade privileges were obtained by the European nations, and in 1874 the Chinese became complicated with the Mohammedans in Turkestan, which was followed by internal changes and the widening of Chinese influence in East Turkestan. China became involved in a war with Japan in 1894, as an outgrowth of rival interests in Korea. The Japanese army and navy promptly invaded Chinese territory and succeeded in winning every combat, both on land and sea. Through this war China lost the island of Formosa and was required to pay an indemnity of about $150,000,000. Japan had demanded the cession of the Liaotung peninsula, including Port Arthur, but Russia was unwilling to lose the foothold she had gained, and in conjunction with France and Germany protested until Japan gave up her claim and Russia secured a lease of the harbor of Port Arthur. A large reform party in China sought to bring the country into closer commercial relations with other nations, who demanded an "open door" market, and this led to serious opposition through the organization known as the Boxers.

The Boxers were centered largely in Shantung and through the assistance of several other organizations promoted an agitation against foreign aggression. These revolutionists advocated the extermination of all foreigners, threatened the legations in Pekin, and on June 20, 1900, murdered Baron von Ketteler, the German ambassador, on the streets of Pekin. This caused the diplomatic corps and those associated with them to fortify themselves in the British legation, which was besieged for nearly two months. To relieve the situation, the allied powers, including the United States, Germany, France, Russia, England, Japan, and Italy, dispatched a large army to China, which was placed under the general command of Count Waldersee. The allied army captured the Taku forts on June 17, and later took possession of Tientsin and Pekin. The royal family of China escaped to the interior and the allied army marched through the forbidden city. Prince Ching and Li Hung Chang were commissioned to conclude a treaty with the powers, and it was submitted and approved by the imperial government in 1901. This treaty required China to pay an indemnity for the damage done to the different foreign interests, granted greater trade privileges, provided protection against members of anti-foreign societies, and gave enlarged advantages to invest foreign capital in constructing public utilities and developing the natural resources.

Little is known of the inner life of Chinese courts, and the chief executive lives a most retired life under the etiquette of the court. The late ruler, Emperor Kwangsu, was born in 1872 and is thought to have reigned from 1901, but was deprived of all real share in government by the dowager empress. Both he and the dowager died in 1908, when Hsuen Tung, an infant of three years, became emperor under the regency of his father, Prince Chun. Li Hung Chang, often called the Bismarck of China, attained to the highest reputation in modern Chinese statesmanship. In 1912 the country became a republic and Yuan Shih-kai was chosen president. Civil war disturbed the country. In 1929 Chiang Kaishek was elected president and brought about greater internal unity.

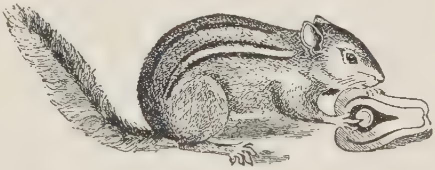
CHINESE EXCLUSION, a term applied to legislation in the United States against the permanent settlement of Chinese in the country. The vast density of the population of China has led to a tendency to emigrate, especially to the Pacific coast in the United States, British Columbia, and Australia. The first treaty between China and the United States regarding residence and travel was effected in 1868. Owing to the cheapness of Chinese labor, many American laborers were injuriously affected, which led to the treaty of 1880, whereby it was sought to absolutely prohibit immigration. The act of Congress passed in 1884 suspended immigration for ten years. Later, in 1892, the Geary law extended the exclusion provision for a further period of ten years, and required Chinese to register and file photographs in order to keep a complete record of those already in the country. This act was reaffirmed in 1902, when Congress further limited immigration and provided certain restrictions upon visiting and traveling. The Chinese population in the United States in 1900 was 89,863; in 1928, 68,639.

CHINESE WALL, a great artificial structure extending about 1,500 miles between China proper and Mongolia. It was commenced in the year 214 B. C., and was intended to protect the country against the marauding raids of the Tartars. The construction is of brick, rising from granite foundations, and the two outer walls inclose great masses of stone and earth. It is about twenty-five feet wide at the bottom and fifteen at the top, and is from twelve to fifty feet high. It is strengthened by towers at regular distances. The great wall winds through valleys and over hills, the greatest height above the sea at one of the elevations being 5,000 feet. Several million men were engaged in its construction for a period of ten years.

CHINGTU (chĭng-tōō′), a city of China, on the Min River, capital of the province of Szechuan. It is inclosed by a wall, has fine streets, several libraries, and a number of beautiful edifices. It is the seat of several public buildings and the residence of the viceroy. Population, 800,000.

CHINOOK (chĭ-nōōk′), a family of American Indians, now nearly extinct. They formerly inhabited the region along the Columbia River, and extended from Oregon to the southern part of British Columbia. They were expert fishermen, kept slaves, and manufactured clothing from skins. From them originated the Chinook dialect, a mixture of Indian, French and English. The Chinook wind was named from this Indian tribe. It is a remarkably pleasant wind common to sections of Washington and British Columbia, coming inland from the Pacific as a direct result of the Japan current. In winter it has a warming influence, melting the snow and ice, while in summer it acts as a cooling and tempering agency.

CHIPMUNK (chĭp′mŭnk), the name of a class of American squirrels. The body is about six inches long and the color is gray or reddish-brown, with black and white stripes on the back. These animals are active and cheery and issue a shrill note when alarmed. They burrow habitations underground, subsist on nuts and cereals, and multiply rapidly. In many localities they are a pest in cornfields.



CHIPMUNK.

CHIPPEWA (chĭp′pḗ-wä), **Battle of,** a military engagement between the British and Americans at Chippewa, a village of Ontario, in Welland County. This village is a port of entry on the Niagara River, three miles above Niagara Falls. The British under Gen. Riall were attacked by the Americans under Gen. Brown on July 5, 1814. The first charge was led by Gen. Porter. He pursued the enemy within a few yards of the entire force of British, who made a gallant bayonet charge, and the Americans were routed, but Gen. Scott was ordered forward and saved the day to the Americans. The latter lost 355 men, while the British loss was 604.

CHIPPEWA FALLS, a city in Wisconsin, county seat of Chippewa County, on the Chippewa River, ninety-eight miles east of Saint Paul, Minn. It is on the Soo Line, the Chicago and Northwestern, and the Chicago, Milwaukee and Saint Paul railroads. The chief buildings include the county courthouse, a State institution for the feeble-minded, the public library, and the high school. It has gas and electric lights, city waterworks, and other municipal improvements. The manufactures include machinery, cigars, furniture, and implements. It has a considerable trade in farm produce and merchandise. It was settled in 1838 and incorporated in 1870. Population, 1905, 9,009; in 1920, 9,130.

CHIPPEWAS (chĭp′pē-wāz), a tribe of North American Indians. See **Ojibways.**

CHIRON (kī′rŭn), in Greek mythology, the son of Cronus and the wisest of all the Centaurs. He lived in Thessaly, at the foot of Mount Pelion, and is famed for his skill in music, hunting, and medicine. His pupils included Jason, Bacchus, Achilles, and Hercules.

CHIROPRACTIC, the art which is practiced to restore health by a system of adjusting the subluxated vertebrae of the spinal column. This art of healing was discovered in 1895 by D. D. Palmer, a Canadian by birth, who established his headquarters at Davenport, Iowa. His son, B. J. Palmer, developed this art by patient and intelligent investigation and practice.

CHISEL (chĭz′ĕl), an edged tool for cutting iron, stone, or wood. It is worked by pressure or by striking the upper end with a mallet or hammer. A carpenter's chisel has a wooden handle attached to the shank of the blade, but those used for cutting metal are entirely of steel.

CHISHOLM, a city of St. Louis County, Minnesota, 60 miles northwest of Duluth, on the Great Northern and the Duluth, Missabe and Northern railways. The industries consist chiefly of iron mining and lumbering. Among the features are the city hall, high school, and public library. Population, 1920, 9,039.

CHITON (kī′tŏn), a class of mollusks whose shell is composed of many calcareous pieces, eight in number. The parts are transverse and overlap each other, and are so formed that the animal can roll itself into a ball much like the armadillo. About 200 species have been described. They are from eight to ten inches long in the coastal waters of California.

CHITTENDEN (chĭt′ten-den), **Russel Henry,** chemist, born in New Haven, Conn., Feb. 18, 1856. In 1882 he was chosen professor of physiological chemistry, which position he held about twenty years, and for some time was a lecturer on physiological chemistry at Columbia University, New York. Besides contributing to periodical literature, he wrote "Digestive Proteolysis," and gained a reputation as an active member of numerous scientific bodies.

CHIVALRY (shĭv′al-rȳ), the knightly system of feudal times, especially the system distinguished by the championship of women and of knightly honor. It had its beginning prior to the time of the Crusades, and during their greatest strength it attained to its advanced stage of development. The principal characteristics of the age of chivalry included the thirst for glory, the love of adventure, a warlike spirit, and a lofty devotion to the female sex. From the 9th to the 12th century a knight was one who held land in fee from a superior and was bound to render him military services. During the height of chivalry, it was customary to place a young knight in the court of a baron or noble knight, under whom he acquired skill in arms and in riding. Later he accompanied his lord in battle, when he was known as a squire or an esquire. A young man attaining the age of responsibility, who inherited estates. was pledged to discharge them honorably in a ceremony of great splendor. The church added solemnity and made the investiture of a youthful knight an imposing religious event, placing before him a high moral and religious ideal to which he was exhorted to aspire. He was implored to have mercy for vanquished foes, purity in youthful relations, and high regard for the Christian Church. Notwithstanding these instructions, knighthood was often accompanied by cruelty and impurity, although the poet celebrated and the church counseled the moral elevation of the true knight. The feudal system was a normal growth from chivalry, when that state of society declined. The most interesting developments of chivalry were the Knights Templar, the Teutonic Knights, and the Knights of Saint John, military orders instituted under its direction. It may be said that the age of chivalry served a useful purpose in making society braver, more pure and compassionate, and that it gave to these virtues high rank, the effects of which are still manifested in modern society.

CHLORAL (klō′ral), a colorless, odorous, oily liquid obtained by passing chlorine gas through absolute alcohol to saturation. It is decomposed into chloroform and formate of potassium by the action of caustic potash. It changes into a white solid by keeping, but is reconverted into a liquid by heating. A crystalline compound called *hydrate of chloral* is formed by adding water. This compound is used in medicine in the form of a syrup, as in cases of acute mania, delirium tremens, and severe chorea. If taken in proper quantities, the effects are restful sleep and nerve quietness, in large doses it tends to paralyze the heart and is otherwise harmful, and should never be taken except under medical advice. In medicine it serves both as a hypnotic and an anaesthetic.

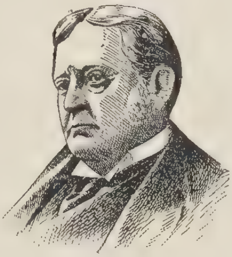
CHLORATE (klō'råt), a compound formed by replacing the hydrogen of chloric acid by a metallic base. Chlorate of potash is the most important of these salts, which, when mixed with combustibles, such as sulphur and charcoal, forms explosive compounds. It is used in the manufacture of fireworks, matches, and percussion caps. The chlorates of potassium and sodium are used in medicine, especially in cases of inflammation and scarlet fever.

CHLORINE (klō'rĭn), a yellow-green combustible gas discovered by Scheele in 1774. It has a strong, irritating odor, and affects the bronchial tubes and lungs. In nature it occurs in the form of metallic chlorides, and is artificially obtained by heating sodium chloride (common salt) with black oxide of manganese and sulphuric acid. It is used as a powerful bleaching agent, and is of value for destroying certain forms of animal and vegetable matter. Its property as a disinfectant has given it a wide use, and it is applied for this purpose much the same as chloride of lime.

CHLOROFORM (klō'rô-fôrm), a colorless liquid of an agreeable odor, having a sweetish taste and smell. It owes its discovery to Liebig in 1832. The process of preparing chloroform consists of distilling water and alcohol with bleaching powders or chloride of lime. In sunlight it is formed by the direct action of chlorine and methane, or marsh gas. The vapor of chloroform is four times denser than air, boils at 62°, is nearly insoluble in water, and may be dissolved readily in alcohol. It decomposes by exposing to the light, by which means the acid and chlorine are set free. It is used in medicine by dissolving in alcohol. In that state it is known as chloric ether and used as a stimulant. Taken internally, it acts as a sedative narcotic and antispasmodic, and is used in cases of colic, asthma, cholera, and neuralgia. Applied externally, it allays irritation, pain in neuralgia, and itching. It is considered one of the safest anaesthetics, when administered by skillful practitioners, but in the hands of one uneducated in medicine it may produce lasting injury or death. Its use in surgical operations and painful diseases is quite common. Chloroform is also used to dissolve iodine, wax, resins, strychnine, and other alkaloids.

CHLOROPHYLL (klō'rô-fĭl), the substance which gives the green color to leaves and herbage. It is produced by the protoplasm of plants, and separates into two elements the carbonic acid gas taken in by the leaves—oxygen and carbon. The oxygen is returned to the air and the carbon is converted into starch in the presence of light, hence the green of the leaves is absent from plants that are deprived of light.

CHOATE (chōt), **Joseph Hodges,** lawyer and diplomat, born in Salem, Mass., Jan. 24, 1832; died May 14, 1917. He studied at Harvard University, where he completed a course in law, and practiced his profession in Boston and New York City. He became a member of the firm of Evarts, Choate & Beaman, which became famous on account of having an extensive and successful practice. He personally conducted many cases before State and Federal courts and international tribunals, among them the prosecution of the Tweed Ring, the defense of Gen. Fitz-John Porter, the Chinese exclusion cases, the Tilden will contest, and the contest involving the Income Tax Law of 1884. In the Bering Sea fishery dispute he represented the Canadian government. In 1894 he was president of the New York State constitutional convention, and in 1896 was defeated by Thomas C. Platt as a candidate for United States Senator. President McKinley appointed him ambassador to Great Britain in 1899, as successor to John Hay, in which office he served until 1905, when he resumed the practice of law in New York. He contributed to periodical literature and is noted as an orator.


JOSEPH H. CHOATE.

CHOATE, Rufus, statesman, born in Essex County, Mass., Oct. 1, 1799; died in Halifax, Nova Scotia, July 13, 1859. He graduated at Dartmouth College in 1819, studied law, and was admitted to the bar in 1823. In 1831 he was elected a member of congress and was reëlected after two years. Subsequently he removed to Boston, where he attained success in the practice of his profession. When Daniel Webster became a member of President Harrison's Cabinet, he was made his successor in the United States Senate. Retiring from Congress, he resumed the practice of law in Boston in 1845.

CHOCOLATE (chŏk'ô-låt), a product obtained from the cacao tree, an evergreen tree about sixteen feet high, native to South America and the West Indies. It is made of the seed and flavored with sugar and spices. The beverage known as *chocolate* is made by dissolving a portion of the paste or cakes in boiling milk or water.

CHOCTAW INDIANS (chŏk'tạ), a large tribe formerly occupying lands along the Gulf of Mexico, and extending from the Mississippi to the Atlantic. They were friendly to the French, but later formed an alliance with the English. De Soto engaged them in battle in 1540. In 1784 they acknowledged the sovereignty of the United States. At the beginning of the last century they began to emigrate toward the west. In 1820 they ceded a part of their territory to the government for lands west of the Arkansas, in Indian Territory, now Oklahoma. Their lands in the South came under the control of Georgia, where many Chocktaws were granted the right of citizenship. In 1830 they ceded the remainder of their lands and moved with the Chickasaws to Indian Territory. In the Civil War they sided with the Confederates and lost their slaves, about 5,000 in number. Schools are supported among them by the government under a treaty made in 1866, and they are taught in the arts, industries, and sciences, many having made much educational advancement.

CHOIR (kwīr), an organized body of singers. The name is applied to the choral singers in churches, cathedrals, and other Christian edifices for worship. In many of the churches, both old and new, the choir occupies a particular place constructed for its use at one side of the altar or chancel, near which is a screen for the organ. See **Church.**

CHOISEUL-AMBOISE (shwȧ-zẽl′än-bwäz′), **Étienne François, Duke of,** statesman, born June 28, 1719; died May 7, 1785. After studying under the Jesuits, he entered the army and fought in the Austrian Wars of Succession, and subsequently returned to Paris, where he was favored by Madame de Pompadour. He was sent to Rome as ambassador in 1756 and subsequently to Vienna, where he concluded an alliance between France and Austria against Prussia. In 1858 he was made minister of foreign affairs and created Duke of Choiseul. He was active in the oppression of the Jesuits and continued an influential political factor even after the death of his patroness, Madame de Pompadour, who died in 1764. Madame du Barry, a favorite of the king, caused his political downfall by intrigue with the court, and subsequently he lived magnificently on his estates.

CHOKE DAMP, the name given to a fire damp resulting from an explosion of gas in mines. It is also called black damp and after damp, and constitutes an irrespirable gas. See **Carbonic Acid.**

CHOLERA (kŏl′ẽr-ȧ), the name applied to several diseases more or less similar to each other. *Cholera morbus* is characterized by vomiting and purgative effects with pain in the abdomen and lower intestines, and is accompanied by a loss of strength. It is caused largely by deleterious food or drink taken in the summer season. *Cholera infantum* is a similar disease in children. It is common to hot climates and to the hot seasons in the temperate regions, and in many instances proves fatal. A remedy of much merit consists of equal parts of tincture of rhubarb, tincture of opium, tincture of cayenne, essence of peppermint, and spirits of camphor. This preparation, thoroughly mixed and taken in doses of from fifteen to thirty drops every thirty minutes, is quite certain to give relief.

CHOLERA, Malignant, or **Asiatic Cholera,** a much dreaded disease, the germs of which are conveyed by means of the air or by water, and often proves fatal. It is epidemic in various regions of Asia, and is often spread to different parts of the earth. In 1829 it appeared in Europe and reached Britain two years later, when thousands of people died. It appeared again in 1848, 1854, 1865, 1873, 1875, and 1885. In 1892-93 it appeared in New York, but was prevented from spreading by prompt methods of isolation and sanitation. In 1848 the disease caused the death of 53,293 persons in England and 20,097 in 1854, while in 1855 not less than 55,000 persons died of it in Egypt.

The first stage of the disease is a severe form of diarrhoea with cramps in the abdomen and legs, usually accompanied by marked muscular weakness. In the second stage the patient suffers from intense prostration, feebleness, loss of voice, blueness of skin, and coldness of breath. The third stage is marked by a state of high fevers, with a tendency to suffer a congestion of the brain, kidneys, lungs, or other vital internal organs. In this and the second stage death often results. The best remedies against cholera are preventive medicines. It is favored and spread by conditions of filth and want of sanitation. The disease is primarily caused by a germ of a fungus or minute form of life propagating itself in the food of the alimentary canal. It is thought that the germ is conveyed into the system by unwholesome foods or impure water. Dr. Koch gave the opinion that the disease is due to the common bacillus, and that this organism is multiplied in the small intestines. Some physicians doubt whether these organisms actually produce the disease, but it is known that large numbers of them are found in persons suffering from it.

CHOLULA (chō̇-lo͞o′lȧ), a city of Mexico, in the state of Puebla, sixty miles southeast of Mexico. It is situated on a plateau 700 feet high, has railroad facilities, and is surrounded by a farming and mining country. At the outskirts of the city is a brick pyramid about 170 feet high which covers over twenty acres, supposed to have been erected by the aborigines in honor of the deity Quetzalcohuatl. Among the manufactures are fireworks, textiles, pottery, and machinery. It has considerable trade, a fine public park, and several schools and churches. Cholula is an ancient city and when visited by Cortez in 1519 it had many temples and 20,000 houses. The Spaniards massacred many of the inhabitants on account of their hostility to Spanish influence. Population, 1918, 10,240.

CHOPIN (shō̇-păn′), **Fréderic François,** Polish pianist and musical composer, born near Warsaw, Russia, March 1, 1809; died at Paris, France, Oct. 17, 1849. He studied music at Warsaw, became an exile after the revolution of 1830, and took up his residence in Paris, where he became admired in society and professionally. His compositions are restricted to pianoforte music, and are held in high esteem by musicians. They consist largely of preludes, polonaises, and waltzes, and have a powerful charm in rhythm and harmony. These compositions are not dance music, but the national music of the Poles, and, blended with French, give an elegant and tasty effect.

CHOPSTICK (chŏp′stĭk), one of two small sticks used by the Chinese in conveying food to the mouth. Chopsticks are made of wood, ivory, or bamboo, and are a substitute for a knife and fork. They are used with much dexterity even in eating food of a liquid character.

CHORAGUS (kô-rā′gŭs), a music director among the ancient Athenians, appointed by the state to be the leader and trainer of a chorus in dramatic contests. It was an office of high dignity and the choragus who was adjudged to have exhibited the best entertainment received a crown and tripod as a prize. He was permitted to build a monument and on it expose his tripod. A street in Athens was formed almost entirely by these monuments, known as the Street of the Tripods. The monument of Lysicrates, erected in 334 B. C., still stands.

CHORD (kôrd), in music, a combination of sounds, the frequency of whose vibrations has a simple arithmetical ratio; that is, of sounds whose combination is in accordance with the laws of harmony. The common chord consists of a bass or fundamental tone and is the basis of all harmony.

CHORUS (kō′rŭs), a term applied to a company of singers and musical recitationists, who perform with appropriate gesticulation. The term originated from the Grecian and ancient tragedy, when choruses were made up of troups of males and females. They appeared on an elevated stage and engaged in singing and dancing as a means of heightening the pomp and solemnity at festivals. In comedy the number in the chorus was twenty-four consisting of one-half males and one-half females. The chorus in music is that part of a composite vocal performance which is executed by the singers of a body, or company, and in which all take part. It is distinguished from the solo airs in that they are rendered by select voices. In song it is applied to the stanza in which the singer is joined by the company.

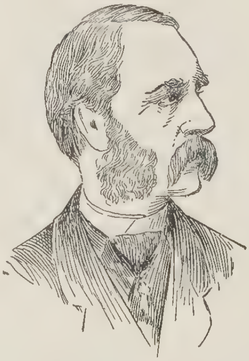
CHOSEN (chō-sĕn′). See **Corea.**

CHOUANS (sho͞o′anz), a party of French royalists, who rose in arms against the revolutionary government in 1791. They were largely peasants of Maine and Brittany and carried on a warfare against the republicans during the French Revolution. Napoleon sent an army of 30,000 men to suppress them in 1799, but they continued more or less aggressive until 1815.

CHRIST, the official title given in the New Testament to Jesus of Nazareth. See **Jesus Christ.**

CHRISTCHURCH (krīst′chûrch), a city in New Zealand, capital of the province of Canterbury, on the Avon River, about eight miles from the sea. The surrounding country is fertile. It is connected by a railway with Lyttelton, its port. The chief buildings include Christ College, the high school, the city hall, and a number of churches. Many of the streets are paved with stone and asphalt. A street railway system, waterworks, electric lights, and sewerage are among the utilities. The manufactures include clothing, furniture, packed meat, and machinery. It has a large interior and foreign trade, especially in grain, minerals, and live stock. The city was founded in 1849. Population, 1906, 49,928; in 1921, 80,193.

CHRISTIAN (krĭs′chan), the name of nine Danish kings, the most important of whom are treated in this article. Christian II., born in 1481; died in 1559. He ascended the throne of Denmark in 1513. In 1515 he married a sister of Emperor Charles V. and in 1518 usurped the Swedish throne, but was expelled from it in 1522 by Gustavus Vasa. In 1523 he was deposed by his Danish subjects and retired to the Netherlands, where he organized an army with which to recover his throne. He landed in Norway in 1531, but was totally defeated and kept a prisoner at Sonderburg for twelve years.—Christian IV., King of Denmark and Norway, Duke of Schleswig-Holstein, born April 12, 1577; died in 1648. He ascended the throne in 1593 and carried on successful warfare against Charles IX., of Sweden, and his successor, Gustavus Adolphus. He did not achieve success as a leader in the Thirty Years' War. In 1626 he was beaten at Lutter by Tilly, and in conjunction with Gustavus Adolphus, in 1628, obtained the Treaty of Lübeck. Later he strengthened the maritime power of Denmark by sending expeditions to the East Indies and extending the foreign trade. He was noted for his devotion to art, science, and financial reforms.—Christian IX., born April 8, 1818; died Jan. 29, 1906. He was the son of William, Duke of Schleswig-Holstein, and married the daughter of Elector William of Hesse-Cassel. He ascended the throne in 1863, as successor to the Oldenburg dynasty, which for 400 years had held the government. As a result of the war between Austria and Prussia, which terminated in the Battle of Sadowa in 1866, he finally lost Schleswig-Hol-



CHRISTIAN IX.

stein and Lauenburg, about one-third of Denmark. The friendship with the Scandinavian people was cemented by the marriage of his eldest son to the daughter of Charles XV., King of Sweden. His reign was particularly successful. It brought about an extension in religious and personal liberties and a successful administration of the affairs at home and in the colonies. He was succeeded by his eldest son, Frederick VIII., in 1906. He had four other children, including George I., King of Greece; Dagmar, Empress of Russia; and Alexandria, Queen of England, the wife of Edward VII.

CHRISTIAN CATHOLIC CHURCH, a religious denomination organized by John Alexander Dowie in 1896, and whose principal seat of influence is at Zion City, Ill. The founder of this sect was a minister in Australia and came to the Pacific coast of the United States to preach and practice faith healing, and subsequently settled in Chicago, where many became converted to his teaching. He founded Zion City on a tract of 6,600 acres, which was purchased for the avowed purpose of building a model Christian city. The land was not sold in fee simple, but instead was leased on contracts that expire in the year 3,000, running for the period of about 1,100 years. This arrangement was agreed upon for the purpose of providing a guarantee against any part of the city being used for purposes not sanctioned by the church, such as conducting a drug store or doctor's office, establishing saloons and playhouses, raising swine, or keeping for sale and selling liquors, oysters, and tobacco in any form.

The Christian Catholic Church carries on educational and commercial work as well as religious teaching. At Zion City are a number of primary and grammar schools, and industrial and general educational work is done at Zion College, all of which institutions are maintained in common with church work. The industries are managed by a board of control. They include publishing and printing, the selling of general merchandise, and the manufacture of soap, candy, lace, clothing, harness, and crackers. The denomination numbers about 100,000 souls, distributed more or less in the United States and Canada, and has adherents in Australia, England, China, South Africa, and other regions visited by missionaries. The teaching is confined generally to the principles of the Christian religion and the sacraments are observed. Special prominence is given to divine healing, and the dogma that diseases are cured in answer to prayer is given marked prominence. Trine immersion is practiced in the sacrament of baptism, and at the close of meetings is a united consecration service. Among the official publications are *Leaves of Healing,* "Voices from Zion," "Elijah, the Restorer," and "Zion's Conflict with Methodist Apostasy."

In 1906 the society became involved in financial difficulties and contentions arose among the members. Dowie was deposed by a faction, while he was on a trip to found a colony in Mexico, and Wilbur Glen Voliva was made the official head of the organization. General nervousness and the mental strain caused by financial reverses hastened Dowie's death, on March 9, 1907. The property of Zion City, at the time of his death, was worth about $10,000,000.

CHRISTIAN ENDEAVOR, United Society of, an association founded by Francis E. Clark at Portland, Me., in 1881, for training the young for the duties of Christian membership. It has societies in the United States, Canada, Great Britain, Australia, China, India, Japan, and other countries. In 1922 the number of societies affiliated with the main body numbered 67,342, with a membership of 4,212,500. The membership is distributed among all evangelical denominations. No taxes are levied and the main bodies assume no authority over the societies in the different churches. These are regulated and managed locally. The purpose of each local society is to encourage an earnest and useful Christian life on the part of each member, to increase mutual acquaintance, and to develop in all the practical duties of Christianity. Annual gatherings are held under the auspices of the united societies. *The Christian Endeavor World* is the official organ.

CHRISTIAN ERA, the epoch or era introduced by the birth of Christ. The beginning of the epoch was calculated about the year 532 by Dionysius, a Syrian monk. It is certain that he fixed the event too late by four years and that Christ was born, according to his calculations, in the year 4 B. C. Hence the year 1908 should have been written 1912. The Christian era is sometimes called the Dionysian era. Time before the birth of Christ is marked B. C., after Christ, A. D. This did not become general in Christian countries until about the middle of the 15th century.

CHRISTIANIA (krĭs-tē-ä'nē-ä), or Oslo, the capital of Norway, located in the province of Christiania. It is situated on an inlet from Skager Rack, known as Christiania Fiord, about sixty miles from the Skager Rack. It was named in honor of Christian IV., who rebuilt it in 1624, and it was renamed Oslo in 1925. The architecture is usually plain and without much ornamentation, and the buildings are constructed mostly of brick and stone. Among the most important structures are the university, an observatory, the palace of the King of Norway, the legislative house, or Storthing, and several cathedrals. The Aggershuus is an old castle which stands on a point of land projecting into the fiord. In connection with the university is a museum of antiquities and an excellent library. Several lines of railroads connect it with the interior of Norway and with

Sweden. The manufactures include glass, soap, ironware, woolen goods, tobacco, leather, paper, spirits, machinery, liquors, clothing, and textiles. Its exports consist largely of iron, machinery, and lumber. It has a beautiful location, electric street railway connections, gas and electric lights, several parks, and numerous statues and monuments. The city is one of the cleanest and most healthful in Europe. Nearly all the inhabitants are Protestants. Population, 1920, 261,445.

CHRISTIANITY (krĭs-chăn'ĭ-tў), the doctrines and precepts taught by Christ; the Christian religion. The Christians are separated into many sects, but nearly all agree with respect to certain fundamental doctrines. They embrace the belief in a Supreme Being, the one living and true God. The great majority hold to the tenet that in the Divine Unity there is a Trinity—the Father, the Son, and the Holy Spirit—to all of whom worship of the highest kind is given. The Father is assigned as the first person of the Godhead; Jesus Christ as the second person is held as God and man; and the Holy Spirit is assigned as the third of the Trinity. The Scriptures of the Old and New Testaments are held to be inspired in a sense in which no other book is inspired, and are, therefore, in the highest degree fitted to enlighten the minds of inquirers as to religious duties.

The first followers of Jesus formed a community or society at Jerusalem shortly after the crucifixion of their Master. In the year 65 an organization was founded at Antioch, in Syria, which assumed the name of *Christians,* and the doctrine of Christianity was soon spread through the provinces of the Roman Empire by traveling apostles. Christian societies were organized in the 1st century in Palestine, Asia Minor, Syria, Greece, Italy, Northern Africa, and the islands of the Mediterranean Sea. Fully one-third of the inhabitants of the Roman Empire embraced this belief by the beginning of the 4th century.

Branches existed early in Christendom; the Gnostics date from the time of the apostles, while the Nestorians originated in the 5th century. Among the important events of the Christian era are the separation of the Greek Catholic and the Roman Catholic churches in the 8th century, the Crusades of the 12th century, and the establishment and rise of Protestantism in the 16th century. At present there are 573,082,533 Christians in the world, of which number 272,860,000 are Roman Catholics, 183,300,000 Protestants, and 111,000,000 Greek Catholics. The most numerous of the Protestant sects are the Lutherans, Calvinists, and Anglicans, in the order named.

CHRISTIANS, a religious sect, comprising the Christian Connection and the Christian Church. These Protestant denominations were organized under the leadership of Abner Jones, at Lyndon, Vt., in 1800, and are now largely represented in Canada and the United States. The Bible is accepted as the only rule of faith, and it is interpreted by the individual rather than under the direction of creeds. Members are admitted on a sincere profession of belief in Christianity and Christian character is a vital test of membership. They support Sunday schools, prayer meetings, and missionary enterprises. The Christians are trinitarians and teach baptism of believers by immersion. In 1925 they had 1,250 churches and an estimated membership of about 150,000. They support 20 institutions of instruction with more than 5,500 students. See **Campbell, Alexander.**

CHRISTIAN SCIENCE, a form of Christian religion based upon the Bible, discovered in 1866 by Mary Baker G. Eddy, who founded the denomination and is the author of its text-book, "Science and Health, with Key to the Scriptures." The basic teaching is that God, the infinite Person, is Love; that He is the only Creator, hence that He has made all that really exists, and has pronounced all creation "very good," according to Scripture. From these premises, Christian Science deduces the temporal and unreal nature of sin, disease, evil, all the phenomena of mortal existence, and declares that these abnormal and unspiritual conditions can be overcome by divine power. Christian Science is organized in nearly all countries. It is estimated that over a million persons have been healed by it and are interested in it. There are 2,202 recognized churches and societies throughout the world. Among the publications issued by the Christian Science Publishing Society are *Christian Science Journal,* a monthly periodical; *Christian Science Sentinel,* a weekly paper; *Der Christian Science Herold, Christian Science Quarterly,* and *Christian Science Monitor* (daily). See **Eddy, Mary Baker Glover.**

CHRISTINA (krĭs-tē'nȧ), Queen of Sweden, a daughter of Gustavus Adolphus, born Dec. 8, 1626; died in Rome, Italy, April 19, 1689. She succeeded her father in 1632, when only six years of age. Her education was liberal, under a plan formulated by her father, and she showed uncommon intelligence and a lively imagination, and possessed great brilliancy. She assumed the reins of power in 1644, and six years later was crowned with the title of king instead of queen. Her cousin, Charles Gustavus, was declared her successor. She ruled with marked vigor, demonstrating a keen interest in learning and science, but in 1654 abdicated in favor of her cousin, owing to weariness on account of personal restraint. Subsequently she traveled extensively in Europe and showed many peculiar eccentricities. She entered Rome on horseback in the costume of an Amazon. Later she embraced the Catholic religion and was confirmed by Pope Alexander VII., assuming the surname of Allesandra. In 1656 she visited Paris and caused her Italian equerry to be put to death for fear of betraying her confidence. When the King of Sweden died, in 1660, she hastened home and attempted to be reinstated on the throne, but failed. In 1666 she endeavored to secure the crown of Poland and also failed. The remainder of her life was spent at Rome, where she founded an academy, devoted herself to artistic and scientific pursuits, and collected a number of valuable medals and paintings.

CHRISTMAS (krĭs′mas), the festival observed by the Christian Church on the 25th day of December in commemoration of the birth of Jesus Christ. No certain knowledge of the birthday of Jesus Christ existed, and its observance was not established until some time after the organization of the first churches. Augustine regarded Good Friday, Easter Sunday, Ascension Day, and Whitsuntide as the only festivals established by the apostles and sanctioned by the general council. He declared Christmas to be of later origin and of lesser authority. Clement of Alexandria mentioned Christmas in the beginning of the 3d century and Chrysostom speaks of it in the 4th century as having been observed for some time. The early Christians of the Orient thought that both the birth and baptism took place on the 6th of January, while Clement of Alexandria held that the 20th of May or the 20th or 21st of April should be observed.

The 25th day of December was advocated by Julius I., Bishop of Rome from 337 to 352, as the most suitable time to commemorate the birth of Christ. This claim was strengthened by the church of the East, which held to the view that the baptism took place on the 6th of January. The day was finally placed on December 25th, which made it possible for all nations to observe a festival of rejoicing that the shortest day of the year has passed. This selection was approved by many prominent Christians because it placed a festival between Whitsuntide and Good Friday. Christmas festivities with their songs, trees, toys, and religious ceremonies are always favorites. A special religious service for Christmas day is held by the Greek, Lutheran, Roman, and Anglican churches. Catholic priests may celebrate three masses on Christmas day. A large number of churches hold no celebration on the two days immediately following Christmas, but nearly all of them have special services.

CHRISTMAS ISLAND, an island in the Indian Ocean, about 250 miles south of the western end of Java. It has valuable beds of phosphate of lime, which are worked quite extensively. The island is a British possession and is a dependency of the Straits Settlements. Another island of the same name is located in the Pacific Ocean, with an area of 234 square miles and a population of 115. It was discovered by Cook in 1777, and is governed from the British administration of the Fiji Colony.

CHRISTMAS ROSE. See **Hellebore.**

CHRISTOPHER (krĭs′tô-fẽr), **Saint,** a saint who suffered martyrdom about the middle of the 3d century. His native home was in Syria, but he traveled much in Palestine and Lydia. In legendry he is described as a giant twelve feet high and of mighty strength, and it is said that he would serve only the most powerful princes. While serving the mightiest princes, he was impressed with a great fear of the evil spirit, when he began to serve that spirit. As soon as he had formed his acquaintance he noticed that that spirit was afraid of Christ, when he began to serve the Savior and followed him. The Greek church celebrates his memory May 9, and the Roman Catholic, on the 25th of July. The Order of Moderation, organized in Austria in 1517, was founded in the interest of temperance and is called the Order of Saint Christopher.

CHRISTOPHER'S, Saint, or **Saint Kitts,** an island in the West Indies, one of the Leeward Islands, about five miles wide and twenty-five miles long. It has an area of 65 square miles. The surface is mountainous, the highest peak being Mount Misery, 4,150 feet. Basseterre is a seaport and the chief city. Local government is administered by a legislature, and is subordinate to the government of the Leeward Islands, under the direction of the British. The island was discovered in 1493 by Columbus and was settled by the English in 1623. Population, 1922, 30,176.

CHRIST'S HOSPITAL, a celebrated orphan's school at London, founded in 1553 by Edward IV., as a hospital for poor orphans and foundlings. It is popularly known as the Blue-Coat School, from the picturesque dress of the boys who attend the institution. It has a boys' and girls' preparatory school at Hertford, founded in 1682. Two day schools were opened in 1890 for 600 boys and 400 girls. King Charles II. enlarged the original endowment, and the annual income now amounts to $300,000 per year. The education is classical, but modern literature and languages are taught. The institution, including the departments at Hertford and Horsham, has accommodations for 2,500 students. A fire destroyed the first building in 1666, but it was rebuilt by Sir Christopher Wren. The present building was erected in 1825 by Shaw. At this institution the following well-known men received their education: Camden, Richardson, Stillingfleet, Coleridge, Charles Lamb, Leigh Hunt, and Sir Henry Maine.

CHROMATIC (krô-măt′ĭk), a term in music. A chromatic chord is one which contains a note or notes foreign to diatonic progression. The eight diatonic tones and five intermediate tones make the *chromatic scale.*—Chromatics is the science of colors.

CHROMIUM (krō′mĭ-ŭm), one of the metallic elements, discovered in 1797 by Vanquelin. It was so named from the number of colored compounds which it forms. It is found in combination with iron and chromite, never in a free state. The latter is a brownish-black ore and is the principal source of chromium. Chrome green, or ultramarine green, is a pigment obtained from chromium. Chromium steel is a kind of steel which contains about one per cent. of this metal, and is valuable for its great hardness and tenacity. Deposits of chromite are found in Asia Minor, Bohemia, Norway, and the Rocky Mountains of Canada and the United States.

CHRONICLES (krŏn'ĭ-k'ls), a portion of the Bible. It forms but one book in the Hebrew, but was divided into two books by the Septuagint translators and was placed directly after I and II Kings. The Hebrew name means *words of day;* thus, has the same significance as our diaries or journals. The Chronicles are among the latest compositions of the Old Testament, and show evidences that the writer knew of many of the earlier books. In the first nine chapters is a line of genealogies which covers a period from the creation to the middle period of the Persians. The work contains valuable contributions to our knowledge of the history of the Israelites.

CHRONOGRAPH (krŏn'ô-gráf), an instrument used to measure and record minute portions of time. It is intended specially for measurements in astronomy, where a record is desired of the exact instant of the occurrence of an event, such as the transit of a star. The so-called recording chronograph is designed to mark the instant of observation in hours, minutes, seconds, and hundredths of a second, in printed characters, and in a form suitable for preservation and reduction. Another form of the chronograph is used at horse races and other occasions where a seconds watch is not exactly suited. It has an ordinary quick-train lever movement, carrying hands which move over a dial. One of these is a seconds hand, which is usually double, consisting of two distinct hands, one superposed over the other. Chronographs used in astronomical observation are usually moved by electricity.

CHRONOLOGY (krô-nŏl'ô-gy̆), the science of computing and adjusting dates and epochs of time by divisions and periods to facilitate in assigning events to their proper times. The system of chronology differs among the nations of the world. The motions of the heavenly bodies produce the natural divisions of time into days, months, years, and cycles. Exact computation can be made only from a point or *epoch,* which is taken to mark the beginning of an *era.* The Jews compute from the creation of the world; the Christians, from the birth of Christ; the Greeks, from the Olympiads; the Romans, from the building of Rome; and the Mohammedans, from the *Hegira* or flight of Mohammed. Besides these, there are various other epochs and data on which to base the assignment of historical facts, scientific discoveries, or notable events occurring in the history of the world. In the Christian chronology, the years before Christ are marked B. C. and those after, A. D. (*Anno Domini,* in the year of our Lord).

CHRONOMETER (krô-nŏm'ē-tẽr), an instrument for the exact measurement of time. The term does not especially include clocks, watches, hour glasses, and other similar devices for the measurement of time, but is restricted more particularly to the instruments having compensations and adjustments to render them independent of the fluctuations of temperature. Their chief use is for making astronomical observations and in measuring longitude at sea. The capacity of these instruments to keep accurate time under great variations of temperature determines their value. Those used at observatories are carefully tested by exposure to heat and cold varying from about —60° to +120°, the extremes within which they are expected to keep exact time. Chronometers used on ships are suspended in gimbals, so the instruments will always maintain the same position.

CHRYSALIS (krĭs'á-lĭs), the last stage through which moths and butterflies pass when going from the larva or caterpillar state to the perfect or winged state. In this stage the insect takes no food, is inactive, and is inclosed in a transparent case composed of fibers spun by the larva. Many species, while in this stage, have a metallic luster. The length of this period depends upon the species and the season. It is attended by changes that take effect in the interior of the insect, its organs securing proper development for the support of the future being.

CHRYSANTHEMUM (krĭs-ăn'thē-mŭm), a flowering plant common to the temperate parts of America and Europe. It belongs to the Compositae order and includes about 150 species. Many are cultivated in gardens and parks for their flowers. The common species include the *golden feather, corn marigold, marguerites,* and *ox-eye daisy.* Various species have been cultivated in China many years and several were brought to Europe in 1764, where they have been developed by cultivation into many colors and forms. They bloom in gardens late in the fall, in some localities in October, November, and December. In shape they range from the plain to the double and semidouble species, and the flowers are either erect or reflexed. They are propagated by the seeds and by cuttings.

CHRYSOLITE (krĭs'ô-līt), a mineral composed chiefly of iron, silica, and magnesia. It occurs in transparent crystals and is usually of a greenish color, but sometimes black, and is used as a cheap kind of ornamental stone by jewelers. Chrysolite is found in basalt near Montreal and other parts of Canada, in the Hawaiian Islands, in Arizona, and in New Mexico. The species found in New Mexico closely resemble garnet and are called *Job's tears* from their peculiar appearance.

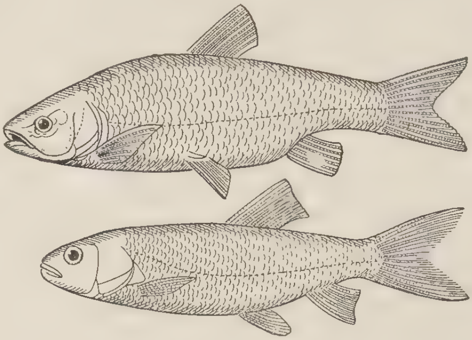
CHRYSOPRASE (krĭs'ō-prāz), a greenish variety of chalcedony, valued as an ornamental stone. It is found in the mountains of Oregon, especially at Riddles, and in several places of Germany. Jewelers use it to some extent for mountings in rings, and the inferior specimens are employed in making necklaces, brooches, and seals. Some grades lose their color with age, especially if kept in a light and warm place.

CHRYSOSTOM (krĭs'ŏs-tŭm), **John, Saint,** named "golden-mouthed" on account of his eloquence, born at Antioch, Syria, in 345 A. D.; died Sept. 14, 407. His instruction was thorough and of a religious order, and he became a monk, preaching successfully much of the time. The earnest training of his mother led him to become serious, gentle, and earnest. He was ordained deacon in 381 and presbyter by Bishop Flavinus in 386. He was so successful and eloquent that the attention of the Jews, heathens, and heretics was attracted, and in 397 he was elevated to the episcopate of Constantinople. In this office he exercised such discretion and economy that he was able to devote a portion of his revenues for charity and hospitals, gaining by his liberality the surname of "John Almoner."

Chrysostom sent missionaries into Palestine, Persia, Scythia, and other countries in an endeavor to spread Christianity. His popularity excited the jealousy of the pagan rulers, which caused his banishment to Pityus, a tract of desolate land on the Black Sea, at the eastern verge of the Roman Empire. Accordingly, he was required to make the journey on foot with his bare head exposed, the cruelty proving fatal. After his death, a Christian sect known as *Johannists* sprang up, who refused to acknowledge his successors, but in 438 they returned to the general communion. His memory is celebrated by both the Greek and Roman churches. The former celebrate the festival of Chrysostom on Nov. 13, and the latter, on Jan. 27.

CHRYSLER'S FIELD, a locality in Dundas County, Ontario, and the site of a battle in the War of 1812. The American army was commanded by Gen. Wilkinson and the British and Canadian troops were under command of Lieutenants Pearson and Morrison. On Nov. 13, 1813, the Americans made the attack in the open fields of John Chrysler, a British military captain then in service. The battle lasted five hours, victory alternately favoring one and then the other. Night ended the conflict with the British in possession of the field. The American loss was 339 and the British lost 187 men.

CHUB, a fish of the carp family, found chiefly in the rivers of Europe. The upper parts are bluish-black, passing into silvery white beneath, and the cheeks are yellow. It weighs about five pounds at maturity and is esteemed for the table. Anglers find it good game, and use worms, cheese, and cured meat for bait. The chub spawns in April and May and bites best in June and July. Several allied species are found in America, including the *chub* of the Columbia River and the *river chub* of the Alleghenies.



AMERICAN CHUB.
RIVER CHUB.

CHUQUISACA (chōō-kē-sä'kȧ), the name formerly given to the capital of Bolivia. It is now commonly called Sucre, which see.

CHURCH, a term first used by the New Testament writers to denote the whole community of Christians, and now applied to the whole body of Christians collectively. It is employed in a more restricted sense to designate a distinct denomination of Christians, as Lutheran, Roman Catholic, Greek Church, Methodist, etc. It is also applied to a building set apart and consecrated for Christian worship. Many public halls or basilicas, courts of adjudicature, and heathen temples were consecrated as Christian churches after the conversion of Constantine. Later special edifices of wood, brick, or stone were built in various styles of architecture. These are designated as chapels, churches, collegiates, conventionals, or cathedrals, this depending upon the style of architecture and the purpose they serve. Many of the ancient churches have the semicircular *apse,* in front of which is the *altar,* and near the latter is the *choir.* This arrangement is maintained in some of the newer edifices, but many modern churches have neither the apse nor the altar, and in some buildings the choir occupies one entire upper end of the church.

CHURCH, Frederick Edwin, painter, born at Hartford, Conn., May 14, 1826; died April 7, 1900. He studied under Thomas Cole at Catskill, N. Y., and painted many scenes in the Catskill Mountains. In 1849 he was elected a member of the National Academy, and in the years 1853 and 1857 traveled in South America. In 1863 he made a tour through Labrador and three years later through Europe, visiting Palestine and the West Indies in the same journey. Many of his paintings were exhibited at the World's Columbian Exposition in 1893 and at other similar exhibitions. Among his most noted works are "Horse-shoe Falls, Niagara," "The Andes of Ecuador," "The Rainy Season in the Tropics," "Valley of Santa Isabella," "Damascus," "Jerusalem," "The Parthenon," and "Niagara from the American Side."

CHURCHILL (chûrch'ĭl), an important river of Canada, rises between the Athabasca and the north branch of the Saskatchewan. It has a northeasterly course and flows into Hudson Bay. Its entire length is about 850. It receives the Beaver River, which rises in Alberta, and drains a large number of lakes, including Reindeer and South Indian lakes. Missinippi and English are other names of the Churchill River.

CHURCHILL, Randolph Henry Spencer, Lord, statesman, born at Blenheim, England, Feb. 13, 1849; died Jan. 24, 1895. He was the second son of the sixth Duke of Marlborough, studied at Oxford, and entered Parliament in 1874. His ability as a Tory debater made him leader in 1880. He became Secretary of State for India in 1885, but the speedy downfall of the Salisbury administration caused him to return to England. With the return of Salisbury to power, in 1886, he became Chancellor of the exchequer and leader of the House of Commons, but after successful work he resigned at the end of the year. In 1887 he made a trip through Europe, seeking to form an alliance against Germany, and in 1891 visited South Africa. He married a daughter of Lawrence Jerome, of New York, in 1874.

CHURCHILL, Winston, novelist, born in Saint Louis, Mo., Nov. 10, 1871. He graduated at the United States Naval Academy in 1894, and soon after began to write naval stories for magazines. In 1903-05 he was a member of the Legislature of New Hampshire. For some time he edited the *Army and Navy Journal,* and became managing editor of the *Cosmopolitan Magazine* in 1895. His writings include "Richard Carvel," "The Crossing," "Coniston, "The Crisis," "A Far Country," and "Mr. Crewe's Career."

CHURCHILL, Winston Leonard Spencer, soldier and author, born in England, Nov. 30, 1874. He joined the army in 1895 and served with the Spanish forces in Cuba. Subsequently he saw service in India and Egypt, and was granted a medal for gallantry in the Battle of Khartum. He was correspondent for the *Morning Post* during the Boer War, and was present at the battles of Spion Kop and Vaal Krantz, and the operations in the vicinity of Dewetsdorp. Later he took part in the engagements at Johannesburg and the capture of Pretoria. He was elected to Parliament in 1900, held important offices during the World War, and served as chief of staff under Baldwin in 1924. His publications include "The River War," "Ian Hamilton's March," "From London to Ladysmith via Pretoria," and "Lord Randolph Churchill."

CHURN, a vessel in which cream or milk is agitated to effect the separation of the butter from the fluid portions. The churn of the pioneers is usually made of a conelike tub, in which the churn dasher is moved by means of a rod or stalk fixed to it. Those of newer manufacture have an inner device by which the churning is effected, or, in other cases, the entire vessel is made to revolve on a shaft. Many of the larger farms have churns that are worked by a gasoline engine or steam or horse power. The churns used in creameries are very large and are propelled by steam power. In some cases the machine is a combined churn and butter worker.

CHURUBUSCO (chōō-rōō-bōōs'kō), a village of Mexico, located six miles south of the City of Mexico. It was the scene of a battle between the Americans under Gen. Winfield Scott and the Mexicans under Gen. Santa Anna on Aug. 20, 1847. The Mexican army was guarding the approach to the city and was entirely defeated. Gen. Scott captured 3,000 prisoners and thirty-seven fieldpieces, and gained the battle at Contreras on the same day. The American loss was 1,053 men, while the Mexicans lost in killed and wounded about 4,000.

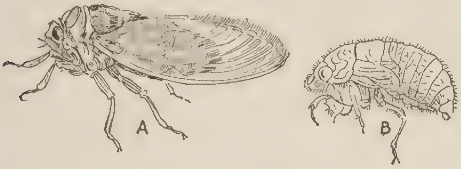
CHUSAN ISLANDS (chōō-sän'), an island group on the east coast of China, the largest of which is called Chusan. This island is from six to twelve miles wide and about twenty-two miles long. Much of the surface is mountainous, with fertile valleys penetrating among the hills. Rice, cotton, tea, tobacco, camphor, and bamboo are the leading products. The mountain districts contain valuable minerals. These islands were in the possession of the British in 1840, 1841, and 1860. The group contains several monasteries and Buddhist temples. Tinghai, a fortified town, is the chief settlement. For the purpose of administration the islands belong to the province of Chekiang. Population, 1923, 345,540.

CHYLE (kīl), a milky fluid found in the lymphatic vessels of the bowels during digestion. It is opaque and under certain circumstances assumes a yellowish or slightly reddish color. After the food is digested in the stomach, it is converted into a yellowish liquid known as *chyme,* which passes into the duodenum, where it is acted upon by the pancreatic secretion and bile. The result is the *chyle,* which, in the thoracic duct, is an oily liquid of considerable turbidity, and is carried into the veins and mingled with the blood. The nutritive portion of the food is contained in the chyle.

CIALDINI (chäl-dē'nē), **Enrico,** Duke of Gaeta, soldier and statesman, born Aug. 8, 1811; died in Leghorn, Sept. 8, 1892. He was first a pupil under the Jesuits and later studied philosophy and medicine at the University of Parma. In 1831 he participated in the Romagnian insurrection. Subsequently, in 1849, he fought in the Austro-Italian War, and later in the Crimean War. Owing to his bravery and success, he was made lieutenant general and in 1861 was created Duke of Gaeta, and the same year became field marshal. He was chosen a senator of Italy in 1864, and devoted the remainder of his life to politics and diplomacy. He was one of the most distinguished Italians among those opposing the papal army and the church influence upon the government of Italy.

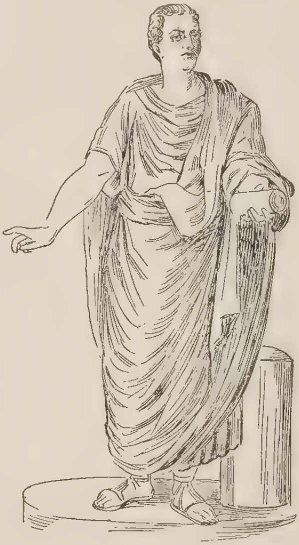
CIBBER (sĭb'bẽr), **Cooley,** dramatist and actor, born in London, England, Nov. 6, 1671; died Dec. 11, 1757. He was of Danish extraction and his father was noted as a sculptor. In 1688 he enlisted in the military forces to support the Prince of Orange, and the following year began to act comedy with some degree of success. He became manager of the Drury Lane Theater, in 1710, and was made poet laureate of England in 1730. Three years later he retired from the stage, but reappeared occasionally as an actor in comedy. In 1740 he published a work entitled "Apology," which contains a history of the stage in the time of Queen Anne. Other writings include "The Non-juror," "The Careless Husband," and "Love's Last Shift."

CICADA (sĭ-kā'då), the name applied to a genus of hemipterous insects common to many regions of both hemispheres. They are well known by their peculiar notes, which are made by drumlike appendages attached to the sides of the body, called the *timbal.* The eggs are deposited in the twigs of trees or shrubs by the adult female insects. The larvae fall to the ground and burrow, and during the larval state feed on the juices of roots. Several species occur in North America, among them the *seventeen-year locust,* which lies beneath the ground seventeen years, after which it emerges to become a perfect insect. However, the development is hastened by heat; hence, in the warmer localities, the broods come out in about thirteen years. Some cicadas require much less time in developing, while different areas are frequented by these insects in different stages of development; thus, cicadas develop almost every year. In the United States a record has been kept of about fifteen different broods that appear at definite places and times.



SEVENTEEN-YEAR LOCUST.
A, Adult; *B,* Larva.

CICERO (sĭs'ẽr-ō), **Marcus Tullius,** Roman orator, essayist, and writer, born at Arpinum, Jan. 3, 106 B. C.; suffered death Dec. 6, 43 B. C. He belonged to an ancient equestrian family of considerable influence, his father being a man of culture. His education was designed to fit him for eminence in the state, for which purpose he was taken to Rome, where he was taught under the direction of the orator Crassus, and became acquainted with the language and literature of Greece. At the early age of sixteen he was introduced to the public life of Rome. His discipline in oratory, instruction in law, and knowledge of philosophy and science were alike complete. His mental exercises were in no way neglected to bring out his greatest powers, and render him fit to occupy a high station among the statesmen and philosophers of Rome. Among his early cases at law was the defense of Roscius, a private citizen, against a favorite of Sulla. Later he traveled in Greece and Asia to become acquainted with Eastern learning, and, on his return, ranked as the leading orator at the Roman bar. In the year 76 he was elected quaestor and was appointed to a government in Sicily, where he ruled with much ability and gave general satisfaction.



MARCUS TULLIUS CICERO.

On his return to Rome, Cicero prepared six orations against Verres, a governor of Sicily, and placed the Sicilians under obligations to himself by his successful management of the case. Beginning in the year 70, he passed through the offices of aedile and praetor, and in 63 was elected to the consulship by an overwhelming majority. In the capacity of consul he became eminent by frustrating the conspiracy of Catiline, in delivering against him his famous "Orations against Catiline." By his promptness and efficiency he secured the friendship of the senators and was hailed by Cato and Catulus as the "Father of his country." Public thanksgivings were voted in his name. His popularity subsided with the expiration of his consulship, largely because of being charged by his enemies with having occasioned the execution of several conspirators without a formal trial, and he was obliged to seek safety in Thessalonica. After six months of exile, he was recalled to Rome and received with much enthusiasm. The envy of the honorable party of the senate was excited by his recovered dignity, and he desired to form a close friendship with them and with the influential factors of the state, Pompey and Caesar. Both courted his alliance and coöperation. This placed him in a peculiar position and caused him to be betrayed into many actions, which increased the power of the triumvirs. In the years 51-52 he administered in the province of

Cilicia and returned to Italy on the eve of the Civil War. He first became allied with the side of Pompey and the republic. Later he secured the friendship of Caesar and accompanied him to Rome.

During the remainder of his life Cicero devoted much attention to the preparation of his orations and essays. Among the most celebrated, aside from the "Orations against Catiline," are "Philippics against Antony," "Essays on Friendship," "Old Age," and "The Whole Duty of Man." After the assassination of Caesar, he first endeavored to unite his interests with Brutus, but afterward refrained from doing so. In the events that followed he was friendly to Octavianus, which friendship was the occasion of the "Philippics against Antony," named from the speeches of Demosthenes against Philip of Macedon, and these were the cause that led to his death. The proscription issued after Antony, Lepidus, and Octavianus had formed a triumvirate included Cicero's name among the proscribed. While endeavoring to escape from Tusculum, where the news of the proscription reached him, he was overtaken by Antony's soldiers. With a remarkable self-composure he put his head forward and offered his neck to the sword of his executioners.

CICERO, a town of Cook County, Illinois, on the Illinois Central, the Chicago, Burlington and Quincy, and other railroads. It is contiguous to Chicago and has vast manufacturing plants, producing terra cotta goods, telephones, and machinery. The place was incorporated in 1869. Population, 1920, 44,995.

CID (sĭd), **The,** a surname of Ruy or Rodrigo de Bivar, the celebrated hero of Spain, and the most prominent figure in Spanish literature. He was standard bearer under Sancho II., son of Ferdinand of Leon, and became commander of the royal troops. The successor of King Sancho, Don Alonzo, banished him and caused his joining the Moorish kings of Saragossa against both Moslems and Christians. Later he led fierce wars against the Moors, and established himself as lord of Valencia, in 1904. His life is revived in the "Cid Poems," "Cid Romances," and Southey's "Chronicles of Cid."

CIDER (sī'dẽr), a liquor made from the juice of any fruit, but most commonly from apples. In making apple cider the juice is pressed from the crushed apples by a cider press and allowed to flow into casks. It ferments in the open air and a clear liquor results. The fruit used should be ripe, as the per cent. of sugar in ripe apples is much greater than in partially ripe or green, and therefore yields a larger proportion of alcohol. Fresh cider is a sweet, pleasant beverage. Cider brandy, or *applejack,* is obtained by distilling fermented cider.

CIENFUEGOS (sē-ĕn-fwȧ'gōs), a seaport city of Cuba, capital of the province of Santa Clara, on the Bay of Jagua, an inlet on the southern coast of the island. The city is one of the finest in Cuba. It is connected with other cities by a number of railroad lines. The exports include sugar, wax, tobacco, rum, and molasses. A large number of trading vessels visit it annually and connect it with the leading seaports of the world. It has many fine public buildings and churches. There are regularly established public schools of instruction for free attendance in all parts of the city. Electric lights and street car lines were built shortly after the war with Spain. The city was founded by refugees from Santo Domingo in 1819. Population, 1907, 60,142; in 1919, 82,092.

CIGAR (sĭ-gär'), a small roll of tobacco made of tobacco leaves and designed for smoking by lighting one end and drawing smoke through it. The choicest brands are imported from Cuba, or are manufactured from tobacco grown in the vicinity of Havana. *Cigarettes* are small cigars made of a small quantity of fine tobacco and used for smoking. *Cheroots* are thicker at one end than at the other, and are smoked the same as cigars.

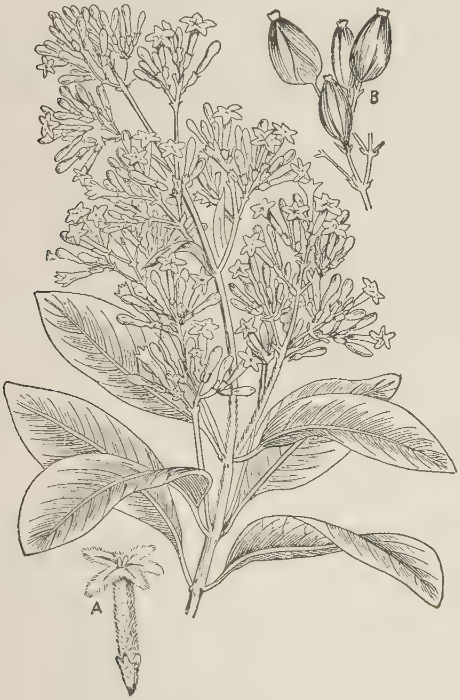
CILIA (sĭl'ĭ-ȧ), the common name of hairlike processes that cover the surface of certain cells, and line the trachea and bronchia. They are in constant motion to sweep out secretions and dust. Their arrangement is in rows. The size ranges from $\frac{1}{1,000}$ to $\frac{1}{12,000}$ of an inch in length. Cilia occur upon the mucous membrane of various organs of the vertebrate animals, especially upon the epithelium, and in certain invertebrates they serve by the rapid vibration as organs of locomotion. In the cells of plants the cilia are exceedingly delicate protoplasmic fibrils.

CILICIA (sĭ-lĭsh'ĭ-ȧ), an ancient country of Asia Minor, bounded on the north by the Tarsus Range, east by the Amanus Mountains, south by the Mediterranean, and west by Pamphylia. It included much of the fertile plain near the sea, the valley of the Cydnus River, and a mountainous region in the western part. Tarsus, the chief city, was long important as a center of education and commerce. The Cilicians were distinguished for maritime enterprise. Their country was invaded by the Assyrians, but remained independent until it was conquered by the Persians. A Roman army under Pompeius subdued the Cilician pirates in 67 B. C., who had fortified themselves in the mountains.

CIMABUE (chē-mȧ-bōō'ȧ), **Giovanni,** painter and restorer of the art of painting, born in Florence, Italy, in 1240; died in 1302. He received his first instructions under Byzantine masters, who were engaged to paint a chapel in the Church of Santa Maria Novella at Florence. Two of his most remarkable paintings are of the Madonna, still preserved in the Florence academy and the Church of Santa Maria Novella. He was the teacher of Giotto, and founded the school of painters known as the Florentine, which included the masters, Raphael and Michael Angelo.

CIMBRI (sĭm′brĭ), the name by which a people were known who fought with the Teutons of northern Germany against the Romans in the year 113 B. C. In several great battles they were victorious, but were defeated by Marcus in the Battle of Verona, in the year 101 B. C. Their horsemen were armed with helmets, spears, shields, and coats of mail. In the early battles with the Romans they displayed much courage and bravery, even the women showing many marks of daring. They are mentioned by Greek writers in connection with the Scythian Cimmerii of the Crimea, but modern writers regard them as Celtic, and connect them with the Cymri of Britain. Plutarch and Tacitus regarded them as Germans.

CIMON (sī′mŭn), son of Miltiades, a distinguished Athenian general and statesman, born about 510 B. C. He was placed in command of the Athenian contingent in conjunction with Aristides, and engaged in war against the Persians in the year 477 B. C. In the year 466 he was commander in chief, destroyed a Persian fleet of 200 vessels, and forced a retreat of the remainder of the navy and the land forces. Later he drove the Persians from Thrace, Caria, and Lycia, and brought great riches to Athens, which he used in public improvements. He advocated the allegiance with Sparta in opposition to Persia, but was opposed by the democracy headed by Pericles, and was banished as an exile, but was recalled after five years. He died in the siege of a city in Cyprus, in the year 449 B. C.



CINCHONA.
A, Flower; *B,* Fruit.

CINCHONA (sĭn-kō′nȧ), a genus of trees found in the Andes of Peru and adjacent countries, and subsequently introduced into India, Java, and Ceylon. It produces a medical bark of much value, known as *cinchona bark,* from which alkaloids, cinchonine, quinine, and other valuable drugs are extracted. The bark is taken off in strips and is renewed by natural growth. In the market the product is known as *Peruvian bark.* The trees are evergreen and have opposite leaves, and the flowers resemble lilacs in appearance. The bark is carefully dried when peeled off, and afterward is baled in packages weighing about 150 pounds. Gathering cinchona bark is a growing industry in Peru and Bolivia. See **Quinine.**

CINCINNATI (sĭn-sĭn-nä′tĭ), the second largest city in Ohio, county seat of Hamilton County, located on the north side of the Ohio River, opposite the mouth of the Licking River. It is 115 miles southwest of Columbus, 270 miles southeast of Chicago, 765 miles from New York, and the focus of a network of important steam railroads and electric railway lines. The Miami and Erie Canal connects the navigation of the Ohio River with that of the Great Lakes, hence it has transportation facilities that are rarely excelled.

DESCRIPTION. The city has an area of seventy-two square miles, with a river frontage of nearly 27 miles. It is built upon two picturesque plateaus, the first of which is near the river and is sixty-five feet above low water mark, while toward the north it rises in abrupt steps to a height of 400 feet above the Ohio. The elevated portions are surrounded by a series of semicircular bluffs, affording a fine view of the city and the surrounding country. Improved highways and inclined plane railways make the summits of the hills as well as the plateaus easily accessible, including the beautiful localities known as Mount Auburn, Price's Hill, Mount Adams, Fairview Heights, and College Hill. The city has a number of popular residence districts and suburban places, such as Avondale, Clifton, Winston Place, and East Walnut Hills, these being specially noteworthy for their fine homes and scenic beauty. Across the river, in Kentucky, are Newport, Covington, Bellevue, and a number of other towns and villages. Five bridges cross the river, affording ample facilities for passage by trains, vehicles, and pedestrians. The mean temperature is 55°, while the average in winter is 34° and in summer 75°.

Cincinnati is platted regularly and most of the streets cross each other at right angles. Many large business and office buildings are located in the central business section, which is substantially and compactly built. The Federal building contains the customhouse, post office, and Federal court, and was erected at a cost of $5,000,000. It is three stories high, in the Roman-Corinthian style, and is built of a durable quality of freestone. The Masonic Temple, Chamber of Commerce, city hospital, city hall, county courthouse, Odd Fellows' Hall, and several banks and department stores are among the chief buildings, many of which have from ten to twenty stories. Many fine churches are located in different parts of the city. The First Presbyterian Church has a tower 285 feet high. Saint Peter's Cathedral, a Roman Catholic place of worship, is in the Grecian style and has a stone spire 224 feet high. Saint Paul's Protestant Episcopal Cathedral, the First and Second Presbyterian churches, Saint Paul's Methodist Episcopal Church, the Jewish Synagogue, and Saint Francis de Sales Catholic Church are splendid examples of ecclesiastical architecture. All of the Protestant denominations are well represented and have commodious and substantial places of worship. The total number of churches exceeds 260. Cincinnati is the seat of a Protestant Episcopal bishop and of a Roman Catholic archbishop.

PARKS. The parks are a feature of the city and cover an area of 2,714 acres. A collection of wild animals is the chief feature of the Zoölogical Garden, which contains sixty acres, and is beautiful on account of its fine walks and picturesque ravines. Eden Park, or Garden of Eden, located on Mount Adams, incloses 216 acres and is the seat of the Art Museum and Art School. Burnet Wood embraces 160 acres and is located in the northern part of the city. An avenue 100 feet wide has been constructed to Spring Grove Cemetery, the largest and best known, which contains 600 acres. Besides it there are about twenty-five other burial places. Fountain Square, on Fifth Street, contains the Tyler-Davidson Fountain and is beautified by many rare flowers and vines. This fountain was cast of bronze at Munich, Germany, and cost $200,000. At Race and Eighth streets is a statue of Garfield, and at Vine and Eighth is an equestrian statue of President William Henry Harrison. Other statues include those of Lincoln and a bronze statue commemorating the soldiers who died in the Civil War, the latter being located in Spring Grove Cemetery.

INSTITUTIONS. The public schools range from the kindergarten to the high schools, which fit for entrance into colleges and universities, and have departments of manual training. Among the higher institutions is the University of Cincinnati, with an observatory at Mount Lookout. It is the seat of the Art Institute and Academy, Lane Theological Seminary, Ohio Mechanics' Institute, Saint Joseph's and Saint Xavier's Jesuit College, and a Hebrew college. The art and professional schools include musical and medical colleges and institutions for instruction in law, commerce, pharmacy, and dentistry. The Museum and Art School, located in Eden Park, has a fine collection of statues and paintings. The public library, with 700,000 volumes, is located in a commodious building on Vine Street. Other libraries include those of the Young Men's Mercantile Association, of the Cuvier Club, of the Ohio Mechanics' Institute, and a number of others. Public charities are numerous.

INDUSTRIES. Important as a railroad center and located on the Ohio River, Cincinnati has extensive commercial intercourse with the leading cities of America. The Union Depot on Third Street and Central Avenue is the converging point of most of its railways, but separate stations are maintained by the Pennsylvania and a number of other lines. About 8,000 manufacturing establishments of different kinds are located in the city. These include chiefly slaughterhouses, packing establishments, motor and wagon works, foundries, mills, smelters, brickyards, machine shops, and boot and shoe factories. It has large soap and radio works. On Mount Adams is the Rookwood Pottery, which has a wide reputation for the manufacture of artistic and meritorious wares. The city has a large trade in cotton and woolen textiles, furniture, butter and cheese, grains of different kinds, fruits, and merchandise. It is noted as a center of wholesaling.

HOTELS AND THEATERS. The chief hotels include the Emery, Grand, Alms, Metropole, Palace, Dennison, Sinton, Havlin, and Gibson. Among the chief places of amusement are the Grand Opera House, Shubert Theater, Arbiter Hall, Walnut Street Theater, and Cox Theater. The Music Hall, endowed by Reuben Springer, has a seating capacity for 5,400 persons and contains one of the largest organs in America. Musical societies are very numerous; the Cincinnati Orchestra is known internationally. When Charles Dickens visited America for the first time he found more to commend in the social refinement and art advancement of Cincinnati than in any other city of the United States.

HISTORY. George Rogers Clark erected two small blockhouses on the site of Cincinnati in 1780, which was probably the first time the locality was visited by white men. The first settlement was made in 1788, when a company from Marietta, Ohio, settled on a tract of land purchased from the government by John Cleves Symes. Fort Washington was built in 1789, and the following year the place was named Cincinnati by Gen. Saint Clair, in honor of the Society of the Cincinnati. It was made the county seat of Hamilton County at this time, was incorporated in 1802, and became a city in 1819. Its prosperity dates with the opening of steamboat navigation on the Ohio in 1815. The Miami Canal was completed in 1830 and the first railroad was built in 1843. The citizens of Cincinnati generally opposed antislavery agitation, owing to their close social and commercial relations with the South, but sided with the Federal government during the Civil War. It was threatened by a Confederate force under Gen. Kirby Smith in 1862 and for a time was under martial law. In 1883 a large part of the lower city was submerged by a flood which destroyed many business houses. The famous Cincinnati Riot, incited by the light sentences imposed upon a number of murderers, resulted in burning the courthouse and caused the death of forty-five persons. Population, 1920, 401,247.

CINCINNATI, Society of, an organization formed in 1783 by the American and foreign officers in the Revolutionary War. The original purposes included the care for widows and orphans of soldiers who had lost their lives, but later it partook more and more of the nature of perpetuating mutual friendships and remembrances of the noted revolutionary events. It was named from Cincinnatus, the great Roman hero, because he, like many of the members, had been called from the farm in defense of the country. The society now consists of a central organization with branches in the states of Virginia, Maryland, South Carolina, New York, New Jersey, Pennsylvania, Massachusetts, and Rhode Island. Meetings are held triennially, occurring in 1899, 1902, etc.

CINCINNATI, University of, a coeducational institution of higher learning at Cincinnati, Ohio. It was founded on bequests made in 1868 by Charles McMicken, and a number of grants were added subsequently by the city. In 1873 the university was opened for instruction; the academic department was added the following year, the medical department was organized in 1896, and the law department was consolidated in the following year with the law school of the Cincinnati College, founded in 1833. The university as now organized includes the academic, law, medical, and graduate departments; the college of engineering; and the summer school. Affiliated with it are various departments and courses of the clinical and pathological school of the Cincinnati Hospital. It has a library of 146,500 volumes, and a faculty of 448 professors and instructors, and an attendance of about 6,250 students. The endowments and buildings, including equipments, have a value of $10,250,000.

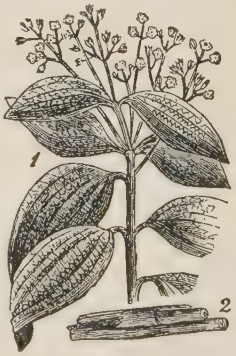
CINCINNATUS (sin-sin-nā'tus), **Lucius Quintius,** Roman statesman and patriot, born about 519 B. C. He is regarded a model of simple manners and patriotic virtues, although he was uncompromisingly a patrician. He was chosen consul in 460, and was made dictator two years later. When the message of his election was sent from Rome, he was found plowing on his small farm. Among his first noted achievements was the rescue of Lucius Minucius, who had been defeated by Aequi, and was surrounded by his forces. After holding the dictatorship for sixteen days, he retired to his farm on the Tiber. In 439 he was again made dictator, and rendered good services by suppressing an insurrection of the plebeians.

CINERARIA (sĭn-ē-rā'rĭ-ȧ), a genus of plants native to South America, including about twenty-five species. They include the garden cineraria, which is an annual with simple leaves and is popular as a greenhouse plant. It is easily cultivated and blooms freely, the flowers being asterlike and include red, white, and purple colors. Most plants of this class have lower leaves with an ashy appearance, hence the name.

CINNA (sē̍'nȧ), **Lucius Cornelius,** Roman statesman and a principal supporter of the faction of Marius. He obtained the consulship in the year 87 B. C. Soon after he united with Cneius Octavius in the impeachment of Sulla, and led a strong agitation in favor of the recall of Marius. After the return of Marius, he sided with him and aided in massacring a number of orators and statesmen, after which the two declared themselves consuls. The army refused to follow Cinna after the death of Marius in preparation to meet Sulla in battle, and he was slain by a number of troopers in the year 84 B. C. His daughter Cornelia was married to Julius Caesar.

CINNABAR (sĭn'nȧ-bär), the name applied to the sulphide of mercury. It is blood-red in color, crystallizes in the hexagonal system, and is found both massive and crystallized. The *vermilion* of commerce is a valuable pigment and is an artificial mercuric sulphide, while the native cinnabar is mixed with impurites that prevent it from being used directly as a pigment. Cinnabar is found in several localities of the Rocky Mountains, in New South Wales, in Austria, and in South Africa.

CINNAMON (sĭn'nȧ-mŭn), an aromatic bark taken from the under branches of several species of the cinnamon tree, a plant of the laurel order. Several species are found in Ceylon, Malabar, and various portions of the East Indies. The trees have yellow flowers, acorn-shaped fruit, and oval leaves, and attain a height of from fifteen to thirty feet. The bark is a staple article of commerce. It is used in the culinary arts and for manufacturing an essential oil. Oil of cinnamon is prescribed in doses of from one to five drops as a stimulant and in the treatment of stomach ailments. See **Spices.**



1. CINNAMON. 2. BARK.

CIPHER (sī'fĕr), in mathematics, a character which of itself possesses no value, but when placed after a number increases it tenfold. In decimal fractions a cipher before a number decreases its value tenfold. See **Cryptography.**

CIRCASSIA (sẽr-kăsh′ĭ-ȧ), a region in the northwestern part of the Caucasus, in Russia. It is bounded on the north by the Kuban River, on the east by the country of the Lesghians, on the south by Mingrelia, and on the west by the Black Sea. The region is mountainous and is inhabited by the Circassians, a class of warlike mountaineers. Circassia has been a part of Russia since 1829.

CIRCASSIANS (sẽr-kăsh′anz), the name applied to a tribe inhabiting Circassia, a mountainous region in the southeastern part of Russia, in Europe, and including largely the northern slopes of the Caucasus. The inhabitants are divided into a number of tribes with different languages. In religion they are nominally Moslems, but their worship is mixed somewhat with Jewish, Christian, and heathen ceremonies and traditions. They were an independent people in the early part of the 15th century and carried on wars against the Tartars, to whom they afterward became tributary. With the enlargement of Russian territory, they were absorbed after much resistance, and showed further hostilities by leaving Russian possessions and emigrating to the provinces of Turkey. The men are prized as soldiers, while the women are chosen as mistresses by the Turks and are among the handsomest in the harems. The total number of Circassians is estimated at about 150,000.

CIRCE (sẽr′sē), a fabulous personage mentioned in Homer's "Odyssey" as a sorceress. She is described as a beautiful enchantress, the daughter of the sun and the sea nymph Perse. It is represented that she dwelt in a magnificent marble palace in the fertile valley of Aeaea. She had the power of changing the form of men and women into the shapes of wolves and lions to be placed as a guard to her abode. She changed twenty-two companions of Ulysses into swine, but he proceeded to her palace with a peculiar herb which had the power of counteracting the baneful acts of Circe. The hero was received with all the grace and fascination at her command, and she presented him with a draught of wine in a golden goblet. He accepted the wine and trusted to the protection of the wonderful herb, which was efficient in guarding him against her perils. She now became attached to the hero and warned him against future dangers, and advised him regarding his destiny. His ship was loaded with provision for the voyage and she reluctantly bade him farewell. She graciously restored to him his former companions on his departure.

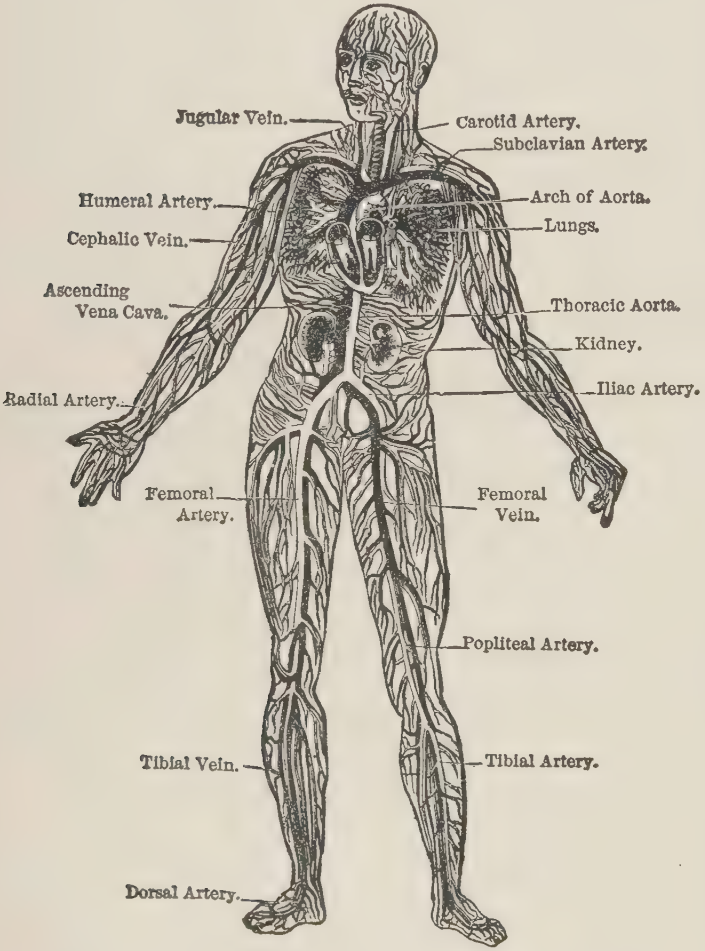
CIRCLE (sẽr′k'l), a plane figure bounded by a curved line called its *circumference*, every part of which is equally distant from a certain point within called the *center*. The *radius* of a circle is a straight line drawn from the center to its circumference, and a straight line drawn through the center and terminated both ways by the circumference is called the diameter of a circle. The space inclosed *within* the circumference is called the area of a circle. The circumference of a circle is to its diameter about as twenty-two to seven or as 3.1416 to one. In astronomy the circle is divided into 360 equal parts called *degrees*, each degree containig sixty *minutes*, and each minute sixty *seconds*. In geography a circle upon the surface of the earth is called a *great circle* when its plane passes through the center of the sphere, dividing the earth into two equal parts; all others are called *small circles*.

CIRCLEVILLE, a city of Ohio, county seat of Pickaway County, thirty miles south of Columbus, on the Norfolk and Western and the Cincinnati and Muskingum Valley railroads. It is nicely situated on the Scioto River and the Ohio and Erie Canal. The manufacturing enterprises include flouring mills, paper and broom factories, several canning plants and machine shops. It has a brisk trade in farm produce and merchandise. Among the chief buildings are several schools, the county and city buildings, and numerous churches. The public utilities include electric lighting, a public library, and a waterworks system. Circleville was settled in 1806 and incorporated in 1814. Population, 1900, 6,991; in 1920, 7,049.

CIRCULATION (sẽr-kû-lā′shŭn), in economics, a term used to designate the circulating coin and notes that constitute the currency of a country. In early times articles were exchanged under a system of barter. In the great commercial activity of modern times a monetary system is needed to facilitate convenience in conducting commercial enterprises on a vast scale. The circulation is regulated by the government, restricted to the needs of trade, and guaranteed to remain stable in the exchange for commodities and the payment of public and private obligations.

In *vegetable physiology* the term is applied to the circulation of the sap in plants. There is no close analogy between the circulation of plants and that in animals. It was thought formerly that sap ascends in the spring and descends in autumn, these two movements constituting the whole circulation. However, it is now known that ascending and descending currents coexist, and that horizontal currents pass between the tissues. The current of sap in ascending enters the leaves, where it is modified by certain influences which fit it for the nutrition of the plant. It is carried back to the roots by a descending circulation in an elaborated condition. The circulation in plants is not carried on by a central organ as in animals, but rotates within the interior of cells, the fluid of the cell not communicating with the adjacent cells. In the lower forms of animal life, as in the entozoa, there appears to be no circulation, the vital fluid in which they live seeming to be imbibed by their textures.

In *animal physiology* the circulation consists of the blood, which is propelled by the heart, penetrating the arteries, capillaries, and veins of the entire system. Although Galen had observed that the blood flows in opposite directions in the arteries and veins, the circulation was not discovered until 1628, when Harvey demonstrated the connection of the heart with the circulatory system. Malpighi used a microscope, in 1661, to demonstrate the passage of the blood in a frog's foot from the arteries to the veins by the capillaries. The accompanying illustration shows the principal organs of circulation, including the heart as the center of the system. See **Artery; Blood; Heart.**



CIRCULATION OF THE BLOOD.

CIRCUS (sẽr′kŭs), an inclosure of space in which sports, games, and various feats of horsemanship are exhibited. The Roman circus was a narrow, long building without a roof in which chariot races, athletic exercises, horse races, and animal fights were exhibited. It was originated by Romulus, and was made popular by subsequent rulers. The largest of the Roman circuses was the Maximus, capable of holding from 250,000 to 385,000 spectators. Among the few remains of these structures are those of the circus of Caracalla. They were usually oblong and from three to five times longer than wide. The largest in the time of Julius Caesar was 625 feet wide and 1,875 feet long. In these buildings were exhibited games, wrestling, boxing, and sea fights; for the latter purpose canals were dug. The conquerors usually brought large herds of wild animals from foreign countries to exhibit in games for the enthusiastic populace.

When Pompey returned from his expedition he gave a circus occupying five days, during which twenty elephants and five hundred lions were killed. The Roman voters expected candidates for office to give extensive circus games and to contribute otherwise to the comfort and amusement of the partisans. In modern times the circus became largely an exhibition of acrobatic displays, feats of horsemanship, collections of wild animals, and hippodrome performances. Associated with modern circuses are exhibitions of gymnastics, legerdemain, statuary, strange and foreign people, and bold feats of equestrianism. Phineas P. Barnum and William Cody are among the greatest showmen of modern times.

CISALPINE REPUBLIC (sĭs-ăl′pĭn), a state organized by Napoleon in 1797 and reorganized by Germany. It contained an area of 16,337 square miles and a population of 3,500,000. However, it received the name of Italian Republic on Jan. 25, 1802, when Napoleon was chosen its president. It was a part of Italy from 1805 to 1814, and was given to Austria in 1815 by the congress of Vienna as the Lombardo-Venetian kingdom.

CISTERCIANS (sĭs-tẽr′shanz), an order of monks and nuns founded in 1098 by Saint Robert, abbot of Molesme. It is properly a branch of the Benedictine order and its members are sometimes called Bernardines. The name Cistercians was derived from Citeaux, France, near Dijon, where the first monastery was established. Originally they wore a brown habit, but later adopted a white one supplied with a black scapular. Their monasteries were established chiefly in lonely valleys. They refrained from eating meat, worked hard and slept little, and cultivated an interest in art and literature. This order was well organized in England when Henry VIII. dissolved the monasteries, but at present it is represented by only a few monasteries in Austria and Belgium, and by one in England and two in Ireland.

CISTERN (sĭs′tẽrn), a reservoir for water, usually constructed underground, and frequently supplied with a filter to purify the inflow. A cistern receives its water by an artificial channel, which is generally connected with the roof of a house or barn by means of spouting. The construction is chiefly of brick laid in cement and plastered on the inside to prevent the escape of water through the pores of the brick, but cheaper kinds are made by using wood or plastering with hydraulic cement directly upon the earthen walls. The purpose is to obtain soft water and store it as needed, but in arid districts cisterns serve to provide water for household use. Artificial reservoirs or tanks are constructed above the ground where the soil is extremely wet. Large cisterns are used for storage of water in manufacturing.

CITADEL (sĭt′ȧ-del), the strongest part of a fortification, intended as the last defense of a garrison against a besieging army. Citadels are usually supplied with two gates, one communicating with the city and the other with places that furnish supplies for the army in case of siege. They command the fortifications and frequently hold out against an enemy even after the city they are intended to protect has surrendered. When William III. of England besieged Namur in 1695, the citadel held out a month after the town had surrendered.

CITIES OF REFUGE, the cities of Canaan in which those guilty of involuntary homicide could flee for safety. Six of the forty-eight Levitical cities belonged to this class, including Shechem, Kedesh, and Hebron, on the west side of the Jordan; and Golan, Bezer, and Ramoth-Gilead, on the east side. They were located so refugees could reach them from all parts of Palestine. Once in the City of Refuge, the accused was given a fair trial. If found innocent of willful murder, he remained until the death of the high priest, when he was released and permitted to return to his former residence.

CITIZEN (sĭt′ĭ-z’n), a member of a state or political community. An alien may become a citizen by naturalization, when he is known as a *naturalized* citizen. On the other hand, one born within the jurisdiction of the country is termed a *natural-born* citizen. In most monarchies it is customary to limit the term *citizen* to the residents of a municipality, while the word *subject* expresses the relation of citizenship to the state or country. A citizen of the United States is a citizen of the State in which he resides. A person may be and usually is a citizen both of the nation and of the State, but his rights under the two are legally different. A resident of a Territory is not a citizen of a State, but is subject to the Federal law. In some states residents are admitted to citizenship in the State, while not eligible to citizenship in the nation. Minors and women are citizens. The right to vote is withheld from minors. Women were granted full privileges of suffrage by the 19th Amendment to the Constitution, which was adopted in 1920.

CITIZENSHIP, the state of being vested with the rights and privileges of a citizen. In the United States citizenship is extended to all individuals born in the United States, and not subject to any foreign power, except untaxed Indians. Children born elsewhere, but whose fathers were citizens at the time of their birth, are citizens. Women, not citizens, become citizens only by naturalization. All persons naturalized are citizens. The Indians who withdraw from tribal relations and enroll as taxpayers become citizens. All classes of foreigners, with a few exceptions, who prove good behavior and moral character, may be naturalized after five years’ residence within the United States. The laws expressly prohibit Chinese, Japanese, and Burmese from becoming citizens.

CITRIC ACID (sĭt′rĭk), an acid obtained from the fruit, roots, and leaves of a number of plants. It is derived largely from the juice of lemons. In preparing it the juice is allowed to ferment, after which it is neutralized with lime, then filtered, and afterward decomposed with sulphuric acid. About five pounds of citric acid are obtained from one hundred pounds of lemons. Among the common plants that yield citric acid are gooseberries, huckleberries, tobacco, grapevines, and sugar beets. The crystalline salts known as nitrates are obtained by combining metals with citric acid. Citric acid is used in treating rheumatism, for effervescent drinks, and in calico printing to prevent the formation of colors not wanted.

CITRON (sĭt′rŭn), a tree common to the warm, temperate, and tropical climates, where it is cultivated for its fruit. It has short and stiff branches, purple flowers, oblong leaves, and large warted fruit. The citron tree was brought from Media by the Romans. It furnishes oil of citron, which is used in confectionery and for culinary purposes. The name *citron* is applied to a variety of watermelon, the rind of which is used for pickles and preserves. It is very hard and inedible, and thrives in most parts of North America.

CITRUS (sĭt′rŭs), a genus of evergreen shrubs and trees native to warm climates, where they are cultivated for their fruit. These plants include the lime, orange, citron, lemon, and grape fruit, or shaddock. In most species the leaves are pointed and have jointed petioles. A volatile oil is obtained from all the species, used largely in the manufacture of medicine and perfumery. The flowers are peculiarly fragrant and yield a volatile oil, and the fruit is pulpy with smooth seeds and spongy rind.

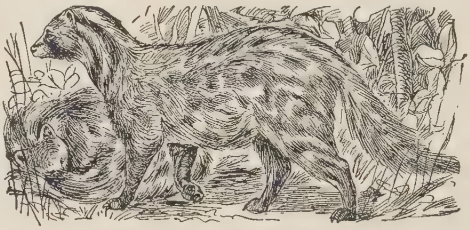
CITY, the name usually applied to a large aggregation of population, the term generally denoting a more populous place than a town. In some states the name is applied to any incorporated town, but in others it is limited to a town having not less than 10,000 inhabitants, and some apply it to a town having at least 2,000 inhabitants. A city in Canada is a municipality of the highest class and is separated from the jurisdiction of the county council. In Great Britain the term is generally applied to all towns that are incorporated and which either are or have been sees of bishops. The larger cities of Greece more nearly resembled a *state* than a *city,* as was the case in Athens and Sparta, and this form of organization is perpetuated in the free cities of Germany.

CIUDAD BOLIVAR (sē-ōō-thäth′ bȯ-lē′-vär), a city in Venezuela, capital of the state of Bolivar, on the Orinoco River. The site is about 185 feet above the level of the sea, but the city is well built and contains many substantial structures. They include a theater, a college, and the governor's palace. In the cemetery are a number of fine monuments, including one of Bolivar. The city ranks as one of the four largest ports of Venezuela and has a large trade in coffee, sugar, rubber, hides, and asphalt. It was founded in 1764 and was known as Angotura until 1819, when its name was changed in honor of Simon Bolivar. Population, 1922, 11,758.

CIUDAD REAL (rå-äl′), a town in Spain, capital of the province of Ciudad Real, about one hundred miles south of Madrid. It is surrounded by a fertile plain, five miles south of the Guadiana, and has railroad conveniences. Among the chief buildings is a hospital founded by Cardinal Lorenzand. It has several monasteries and churches and is the headquarters of the Hermandad, or Holy Brotherhood. The manufactures include leather, woolens, flour, and olive oil. It was founded in the 13th century by Alfonso X., who fortified it as a strategic point. Population, 1922, 15,568.

CIUDAD VICTORIA (vēk-tō′rē-ä), a city in Mexico, capital of the state of Tamaulipas, 160 miles southeast of Monterey. It is surrounded by a sugar-growing district, has railroad facilities, and is a market for fruit and sugar. It is the seat of a bishop and the residence of several consular agents. The manufactures include cigars, sugar, clothing, and machinery. It was founded in 1750 and received its present name in 1825. Population, 1922, 16,810.

CIVET (sĭv′ĕt), a carnivorous mammal of Asia and Africa, resembling somewhat the fox and the weasel. The head is long, the ears are short and rounded, and the color is grayish with a tinge of yellow. The body is from three to four feet in length, including the tail, and about twelve inches high. Several species have been described, but the African civet is the best known. It feeds on birds, reptiles, and small quadrupeds, and is regarded a benefactor in the valley of the Nile for its ability to devour the eggs of the crocodiles. From it is obtained a fatty substance known as civet. It is a pale-yellow or brownish substance, about the consistency of honey, and is secreted by the anal glands of this animal. It is removed from the bag about twice a week with a small spoon, and after being cleaned has a value of $10 or $12 per ounce. It is used in making perfume. In many sections of Africa civets are kept for this product.



AFRICAN CIVET.

CIVILIZATION (sĭv-ĭ-lĭ-zā′shŭn), a term applied broadly to the culture of a people in contradistinction to those classed as barbaric or savage. A nation is considered civilized when a large proportion of its inhabitants have a high state of intellectual and moral development, and show evidences of increase with the advance of years. Civilization is the outgrowth of material prosperity, between which and the higher state there are frequent actions and reactions. The state of the society of the world exists at the present time with regard to form as barbarous, semicivilized, and civilized. Many scholars and writers believe that the present population of the earth sprung from Noah's family, and that he and all that constituted his household were far advanced in civilization. Others hold a contrary view, thinking that man has shown a systematic growth and development to higher conditions through the ages. This class assert that man originally occupied a barbarous state and that he has advanced from century to century until the present time, although it is admitted that there are some people and nations who have shown no advance, or have fallen back into the state of barbarism, if they ever possessed any degree of civilization.

The first stage of society seems to be a highly barbarous one, in which the food consists of fruits, roots, and fishes. In the second stage man is represented as a hunter, but passes into the state of a shepherd in the third, in which state wild animals are domesticated to avoid the uncertainty of the result in hunting. In the fourth stage man becomes an agriculturist, and finally, in the last and highest stage, engages in manufacture and commerce. The possibility of civilizing all nations, abolishing wars, and inaugurating peace has long been a question of serious discussion.

The tendency to higher development seems equal only to the spirit of retrogression, and a nation once civilized may remain in that state only a few decades or centuries. If civilization had been a permanent institution, it would have matured into world-wide achievements from the stages attained in Assyria, Babylonia, Egypt, and the other ancient nations, and by this time have spread to every country. With the rise of civilization in Western Europe there came a period of retrogression in the East, and this, and other examples which might be cited, are evidence conclusive that the work of great physical, mental, and moral effort to make mankind better and wiser must be pursued with ever increasing intensity. However, climate, food, soil, and the aspects of nature are the principal causes of intellectual progress. Viewed from this standpoint, it is assumed that religion, literature, and governments are the products, not the cause, of civilization.

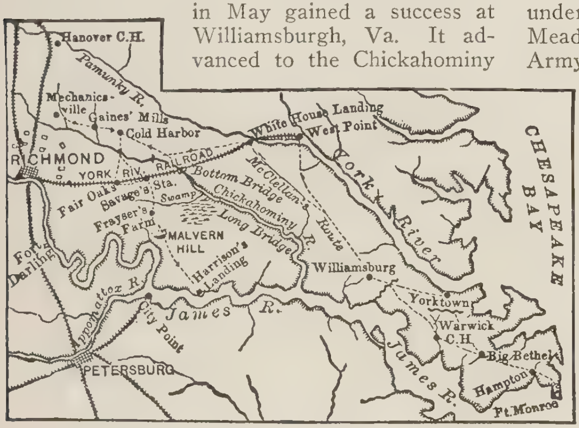
CIVIL SERVICE, the service of government which is distinguished from the military and the naval affairs. Government is separated into three branches—*legislative, judicial,* and *executive.* The legislative branch is representative of the people, and in it is vested the lawmaking power. The judicial branch interprets and gives meaning to the law, and establishes and administers justice. The executive branch is the law-enforcing power. Each of the three departments of government is more or less concerned with the civil service. Owing to much responsibility resting upon the different departments, the reform and improvement of this service in many countries has been long a question seriously considered. In the United States partisans often biased appointments to office, which led to inefficiencies and public criticism. Owing to this fact, a system has been established by which competitive examinations are provided for candidates, and the fitness of applicants is tested without regard to politics. Appointments are given to those showing the highest degree of fitness, and these are to remain in office during good behavior. By these means party politics are removed and the efficiency of public service is increased materially. The number of government offices which are now in the civil service list is about 500,000. Within recent years the appointment to office in many cities has been established upon this plan, which is generally called the *merit* or *competitive* system.

CIVIL WAR IN AMERICA, the armed conflict of 1861-65, between the Northern and Southern sections of the United States. Sectional differences had existed from the beginning of the Union, but after the time of the Missouri Compromise of 1820 the differences were based largely upon the economic and social divergence between the North and the South caused by the existence of slavery. Frequent tendencies to disrupt the government prevailed from time to time, but they increased materially after 1850, chiefly on account of the passage of the Fugitive Slave Law and the incidents connected with its enforcement. Other causes of dissatisfaction were the repeal of the Missouri Compromise in 1854, the Dred Scott Decision of the United States Supreme Court in 1858, the Lecompton Constitution for Kansas in 1858, and the John Brown Raid at Harper's Ferry in 1859. However, the election of Lincoln in 1860 brought disunion to a head. Seven states seceded between Dec. 20, 1860, and Feb. 1, 1861. These were Alabama, Florida, Georgia, Louisiana, Mississippi, South Carolina, and Texas. The Confederate States of America were organized on Feb. 4, 1861, at Montgomery, Ala., and the four states of Arkansas, North Carolina, Tennessee, and Virginia joined the Confederate States by July of the same year. Kentucky, Maryland, and Missouri were divided and were represented in both armies, while the western counties of Virginia remained loyal to the Union and later were organized as the State of West Virginia.

It was at first expected by many citizens of both sections that there would be a peaceable separation. Buchanan temporized and was succeeded by Lincoln, who at first could not see his course clearly, but when the Confederates fired upon Fort Sumter, in the harbor of Charleston, S. C., on April 12, 1861, it precipitated the conflict. President Lincoln immediately called for 75,000 volunteers to enforce the authority of the Union and declared a blockade on the coast of the Southern States. The Confederate States likewise called for volunteers and issued letters of marque and reprisal. The North was rich and had a greater variety of industries than the South, where agriculture was the only large industry. However, the people of the South were better united and were pervaded with a more enthusiastic military spirit.

The first blood was shed in Baltimore on April 19th in a street attack on the Sixth Massachusetts Regiment, which was on its way to Washington. It was followed by active operations in the western part of Virginia, which each of the contending parties tried to hold. The Federals were defeated on June 10 at Big Bethel, Va., and on July 21 occurred the first Battle of Bull Run, when the Federals under Gen. McDowell were completely defeated by the Confederates under Generals Johnston and Beauregard. The effect of the Confederate success at Bull Run was to encourage the South and raise a determined spirit in the North, and to unify both sections in support of their respective policies.

Though the experiences of the first year were decidedly against the Federals, their cause was greatly strengthened in 1862. Gen. Thomas succeeded in expelling a large part of the Confederate soldiers from Kentucky, while Pope, Buell, and Grant cleared the upper Mississippi and the lower Cumberland and Tennessee, with battles at Shiloh and Corinth, while Farragut captured New Orleans. Gen. Pope and Commodore Foote captured Island No. 10, in the Mississippi, and Maj. Gilmore bombarded and took possession of Fort Pulaski, near Savannah, Ga. In March of the same year the Confederate ironclad *Virginia,* formerly the *Merrimac,* was defeated in Hampton Roads by the newly constructed *Monitor.*

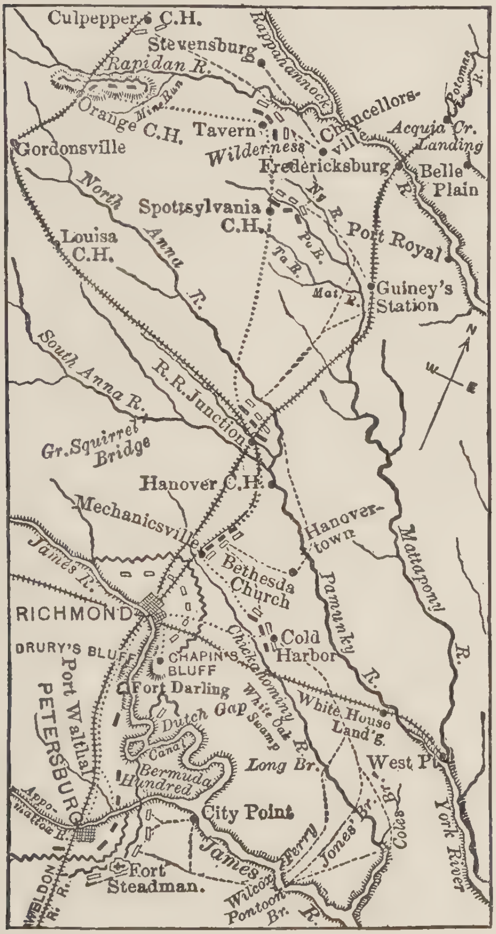


SCENE OF THE PENINSULAR CAMPAIGN.

Richmond, the Confederate capital, was an objective point in 1862, and Gen. McClellan undertook its capture with the Army of the Potomac. This army was carefully organized and disciplined and took a position on the peninsula formed by the York and James rivers, and in May gained a success at Williamsburgh, Va. It advanced to the Chickahominy and in June won the Battle of Seven Pines, or Fair Oaks, but the Federals were compelled to abandon the project after a hard-fought campaign of about four months, which included the Seven Days' Battles, known separately as those of Oak Grove, Mechanicsville, Gaines's Mill, Savage's Station, Frazier's Farm, and Malvern Hill. McClellan was superseded by Halleck in July and the contest was shifted to northern Virginia, where occurred the second Battle of Bull Run between the Federals under Pope and the Confederates under Lee, Longstreet, and Jackson, in which the Federals were defeated and driven back upon Washington. Lee now concluded to strike a master blow by crossing the Potomac into Maryland, but he was met at South Mountain by McClellan, who defeated him in the severe Battle of Antietam and compelled him to fall back into Virginia. In September Stonewall Jackson recaptured Harper's Ferry, where the Confederates took about 12,000 prisoners and valuable stores. The latter made an heroic effort to drive the Federals out of Kentucky and Tennessee, and Gen. Bragg with an army of 45,000 men entrenched himself at Perryville, where he was defeated by Rosecrans and Van Dorn was repulsed at Corinth. Buell, who had been commander of the Army of the Cumberland, was succeeded by Rosecrans, who engaged Bragg's army in a battle lasting three days at Murfreesboro, after which the Confederates retreated. Among the severe losses of the Confederates during the year was the death of Gen. Johnston, who fell at Shiloh, or Pittsburg Landing, on the Tennessee, in April.

The proclamation emancipating the slaves in the rebellious states, which had been decreed by President Lincoln in September, took effect Jan. 1, 1863. During the year the campaigns turned the tide in favor of the Federals. Hooker succeeded Burnside as commander of the Army of the Potomac, but was defeated in a great battle at Chancellorsville, where the Confederates lost Stonewall Jackson, and Lee understook the second invasion of Maryland. Meade succeeded Hooker as commander of the Army of the Potomac and immediately pursued the Confederates. The armies met at Gettysburg in July and fought desperately for three days with the result that the Federals gained a complete victory. Lee crossed the Potomac into Virginia and took a stand at the Rapidan. Meanwhile Gen. Grant undertook the capture of Vicksburg, which the Confederates had fortified, and Pemberton was compelled to surrender his army of 30,000 men almost the same time that the victory of Gettysburg was won. Port Hudson fell in July and gave the Federals complete control of the Mississippi, thus dividing the Confederacy into two sections. However, the Army of the Cumberland under Rosecrans was severely defeated by Bragg in the Battle of Chickamauga. Grant was now made commander of the Department of the Mississippi, which included all the armies of the West, and in November defeated Bragg at Chattanooga, in the battles of Lookout Mountain and Missionary Ridge. The year closed with the Federals in control of the Mississippi and in possession of the states of Arkansas, Florida, Kentucky, Louisiana, Mississippi, and Tennessee.

The ability of Grant in his remarkable campaigns in the West brought about his appointment as commander in chief of all the armies. In March, 1864, he took personal command of the armies in the East and placed Sherman in charge of the West and South. Sherman, with an army of 100,000 men, defeated the Confederates at Dalton, Rome, and Resaca, but was himself defeated at Kenesaw Mountain. He occupied Atlanta after it had been evacuated by Hood, who had succeeded Johnston, and two months later began his march to the sea, reaching Savannah on Christmas. Hood had made a counter movement by invading Tennessee, but his army was destroyed by Thomas in the Battle of Nashville. Meanwhile, the Army of the Potomac, under immediate command of Meade, undertook the campaign of the Wilderness to force the ultimate evacuation of Richmond. The Battle of the Wilderness, near the Rapidan, was fought in May without either side gaining a victory. This was followed by the Battle of Spottsylvania Court House, the engagement at the North Anna River, and the repulse of the Federals at Cold Harbor. Grant now crossed the Chickahominy and was met by Lee at Petersburg, where he conducted a protracted siege. Gen. Early moved rapidly across the Potomac and won several successes, including that of the Monocacy, and then withdrew into the Shenandoah Valley, where he was defeated near Winchester by Sheridan and later was routed at Cedar Creek. In June of the same year the Confederate cruiser *Alabama* was sunk off Cherbourg, France, by the *Kearsarge* and Farragut defeated the Confederate squadron in Mobile Bay.


Culpepper C.H.
Stevensburg
Rapidan R.
Rappahannock
Mine Run
Orange C.H.
Tavern
Wilderness
Chancellorsville
Potomac R.
Acquia Cr. Landing
Gordonsville
Fredericksburg
Belle Plain
R.
North Anna R.
Spottsylvania C.H.
Ny R.
Port Royal
Po R.
Ta R.
Louisa C.H.
Mat. R.
Guiney's Station
N
W
E
South Anna R.
R.R. Junction
Gr. Squirrel Bridge
Hanover C.H.
Mechanicsville
Hanovertown
Mattapony R.
James R.
Bethesda Church
Pamunky R.
RICHMOND
Cold Harbor
DRURY'S BLUFF
CHAPIN'S BLUFF
Chickahominy R.
Port Walthal
PETERSBURG
Fort Darling
Dutch Gap
White Oak Swamp
White House Land'g.
Canal
Bermuda Hundred
Long Br.
West Pt.
Appomattox R.
City Point
Ferry
Jones' Br.
Coles Br.
York River
James R.
Fort Steadman.
Wilcox
Pontoon Br.
WELDON R. R.

SCENE OF THE CAMPAIGNS AROUND RICHMOND.

In February, 1865, Sherman left Savannah and marched through South Carolina, where he took possession of Columbia and Charleston, and pushed northward into North Carolina. Johnston undertook to check Sherman at Bentonville, though met with defeat in this design. Lee made an attempt on March 25th to break through the Federal line at the Appomattox River and captured Fort Stedman, but this was retaken by the Federals. Sheridan defeated the Confederates at Five Forks on March 31, thus exposing the connection of Lee with Richmond, and on April 2 Grant made an attack on the whole line at Petersburg. Richmond was immediately abandoned and Lee retreated to Lynchburg, where he was intercepted by Sheridan and surrendered his army to Grant at Appomattox Court House on April 9, while Johnston surrendered on the 25th. The last fight took place on the Rio Grande, May 13, 1865, and the last armed forces were surrendered by Kirby Smith on May 26. Jefferson Davis, President of the Confederate States, was captured on May 10 and confined at Fortress Monroe. At the time of the final victory, on April 14, President Lincoln was assassinated.

The Civil War, from April 12, 1861, when Fort Sumter was bombarded, to May 26, 1865, when the Trans-Mississippi army surrendered, covered a period of about four years. The Confederates had about 500,000 men and lost 95,000 in killed and wounded, while the Federals had 2,666,999 men and lost 359,258. It is not certain what number of Confederates were killed by accident or disease, but it is estimated that the total is nearly 200,000. The war cost the Confederate States about two billion dollars and the United States about three and one-half billion, and the latter has paid in pension to Union soldiers about as much as the sum spent by it to maintain the Union. It is estimated that the total cost, counting both sections of the country, aggregates nine billion dollars. See **Confederate States.**

CLAFLIN, Horace Brigham, philanthropist, born at Milford, Mass., Dec. 18, 1811; died at Fordham, N. Y., Nov. 14, 1885. He succeeded his father in business in 1831. The following year he opened a store in Worcester, and in 1843 removed to New York, where he engaged in the wholesale dry goods business. In 1864 he became head of the firm of H. B. Claflin & Co., whose business aggregated $72,000,000 a year. He was a prominent member of Beecher's church at Brooklyn, where he became known on account of his princely charities and assistance to promising young men. He was a strong advocate of the freedom of the slaves as early as 1850.

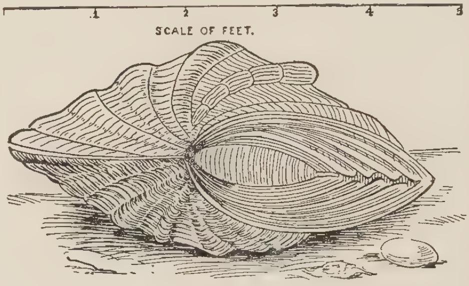
CLAIBORNE (klā'bôrn), **William,** colonist, born in Westmoorland, England, in 1589; died in Virginia in 1676. He was a descendant from a distinguished family, became surveyor of the Virginia plantations under the London Company, and arrived in Jamestown in October, 1621. He acquired an estate of 45,000 acres. In 1625 he became secretary of state for the colony, and in 1628 was commissioned to make discoveries southward and open trade with the Indians. He settled and established a trading post on Kent Island in Chesapeake Bay, in 1631, and induced many settlers to locate on his lands. Lord Baltimore's first colony arrived at Saint Marie's in 1634 and claimed control over the Island of Kent, which resulted in a dispute, and the settlement of the island became a failure. He returned to England in 1637, joined the revolutionary party under Cromwell, and was appointed, in 1651, to proceed to America for the purpose of reducing Virginia and Maryland to submission. Accordingly, the government was overthrown and an administration of the Puritans was established in its stead, with Claiborne as secretary of state.

CLAIBORNE, William Charles Cole, statesman, born in Virginia in 1775; died Nov. 23, 1817. He studied law and removed to Tennessee, where he served as territorial judge. In 1796 he was a member of the convention that prepared the constitution of the State of Tennessee, was elected to Congress the following year, where he served two terms, and in 1802 became Governor of the Territory of Mississippi. The following year, when Louisiana was bought from France, he was one of the commissioners to take charge of that region, and in 1804 became its first Governor. He was elected Governor of Louisiana in 1812, when it was admitted as a State, and defended New Orleans, in conjunction with Gen. Jackson, against the British. He was elected a member of Congress in 1816, but did not take his seat on account of impaired health.

CLAIRVOYANCE (klâr-voi'ans), an alleged faculty or power claimed to be possessed by some persons while under the influence of mesmerism. By means of it the clairvoyant claims to be able to see mentally things concealed from sight or at a great distance, to discover things hidden from sight, and to describe clearly events happening at a distance. The claim that clairvoyance is a reality is not admitted by scientists. See **Mesmerism.**

CLAM, the name applied to various bivalve mollusks, which are most numerous in the sand and gravel between the high and low water mark. The best known species are the sea, or hen, of the Atlantic; the soft-shelled clam, called the cob in England; the edible giant clam of the South Sea; and the fresh-water clam, which is properly a mussel. The clam is a favorite food, while the shells are used in many cities to make ornaments, buttons, snuff boxes, knife handles, and beads. Off the East Indian coast the *giant clam,* weighing 500 pounds, is found.

CLAN, meaning offspring or children, the name applied to a tribe or number of families bearing the same surname, claiming descent from common ancestors, and united under a chieftain who represents that ancestor. The clan system still exists among the Arabs, Tartars, and other tribes of Asia and Africa, and among a number of other peoples, particularly among Indians. A clan system was instituted among the people of Scotland in the reign of Malcolm II., about the year 1008, but it was of much greater antiquity in other countries. The members of a clan were kin by birth and were united by other ties under a chieftain, who was the supreme ruler. Each clan occupied a certain portion of the country, and wars among clans were both frequent and severe. The legal authority of clannish chiefs was abolished by a law passed in 1747, and the government became merged into a system more nearly subject to the central authority. During the period that clans flourished, they were divided into two general classes—those of the Highlands and the clans of the Borders.



GIANT CLAM.

CLAPP (klăp), **Moses Edwin,** lawyer and statesman, born in Delphi, Ind., in 1851. He studied at the University of Wisconsin and in 1873 was admitted to the bar. He built up a successful law practice in Saint Croix County, Wis., removed to Fergus Falls, Minn., in 1881, and ten years later removed to Saint Paul. In 1887-93 he was Attorney General of Minnesota, and succeeded Cushman K. Davis as United States Senator in 1901. He was reëlected in 1905 and 1911.

CLAPPERTON (klăp'pĕr-tŭn), **Hugh,** African explorer, born at Annan, Scotland, in 1788; died at Changary, near Sokoto, Africa, April 13, 1827. He went to sea at the early age of seventeen years, and on account of distinguished services was appointed to the rank of lieutenant. He accompanied Col. Denham and Dr. Oudney on an exploring expedition into the interior of Africa. After reaching Tripoli, in 1822, he started to Bornu, and proceeded as far as Sokoto, but returned to England in 1825. He made a second voyage to Africa in 1826. Starting from the Bight of Benin, he again visited Sokoto, where he was detained by Sultan

Delo and died on account of hardships of the journey. He was the first European to penetrate from the Bight of Benin into the interior of Africa. Clapperton was an intelligent and unprejudiced observer, and through him geographical knowledge of Africa was greatly enlarged.

CLAREMONT (klâr′mŏnt), a town in Sullivan County, New Hampshire, forty-eight miles northwest of Concord, on the Boston and Maine Railroad. It is surrounded by a productive farming country and is a center of manufactures. The chief buildings include the Fiske Library, the high school, and a number of churches. Among its industries are cotton, woolen, and paper mills, printing, machine works, and marble yards. An abundance of water power is obtained from the Sugar River. Population, 1900, 6,498; in 1920, 9,524.

CLARENDON (klăr′en-dŭn), **Constitutions of,** a series of ordinances made by a council of the nobles and prelates in England, at the village of Clarendon, in Wiltshire, in 1164. These laws were favored by Henry II. as a means to check the power of the church and to limit the clergy in exercising secular jurisdiction. They limited and defined the jurisdiction of the Pope in England, and gave the crown power to interfere in the election to fill vacancies in offices and dignitaries. By their terms it became necessary to secure the consent of the king to make appeals to Rome, clergymen were forbidden to leave the realm without royal sanction, and clergymen accused of crime were taken for trial before ecclesiastical courts, after which the law courts were empowered to inflict further punishment.

CLARENDON, Edward Hyde, Earl of, statesman and historian, born at Dinton, England, Feb. 18, 1609; died at Rouen, France, in 1674. He was the son of a private gentleman, who provided for his education at Oxford. Subsequently he studied law under his uncle, Nicholas Hyde, then Chief Justice of the king's bench. He became a member of the Long Parliament and voted on the side of the popular party. In 1642 he attached himself to the royal cause and was appointed Chancellor of the Exchequer. He accompanied Prince Charles to Jersey, where he remained two years, and began his "History of the Rebellion." Soon after he wrote various papers in which he discussed a number of important acts of Parliament. He went to Paris in 1648, and the next year proceeded to Spain to secure aid for Charles II. at the Spanish court, but his mission proved unsuccessful. In 1657 he was appointed High Chancellor of England by Charles II. At the Restoration his appointment was confirmed, and later he was made chancellor of the University of Oxford. In 1663 he was accused of high treason in the House of Lords and was blamed for the ill success of the war with Holland and the transfer of Dunkirk to the French, besides other unpopular measures. He was impeached for high treason in 1667 and spent the closing years of his life in exile. His body was taken from Rouen to England and buried in Westminster Abbey. Though an exemplary citizen in many respects, he lacked firmness and enthusiasm as an official. Ben Jonson was his companion in youth and his life-long friend.

CLARENDON, George William Frederick Villiers, Earl of, statesman, born in London, England, Jan. 12, 1800; died June 27, 1870. He studied at Cambridge, entered the diplomatic service, and was appointed ambassador at Madrid in 1833, where he attained influence in aiding the Spanish government to be established on a constitutional basis. In 1838 he returned to England and became a member of the House of Lords. He was appointed Keeper of the Great Seal in 1840, and supported Sir Robert Peel in abolishing the corn laws. In 1846 he was made president of the board of trade and Lord Lieutenant of Ireland the year following. His official service in Ireland began during troublous times, but tranquillity was restored by his prompt and decisive measures. He was placed at the head of the foreign office in 1853, and during his administration the Crimean war marked an important period in European history.

CLARINET (klăr′ĭ-nĕt), or **Clarionet,** a wind instrument with a reed, first made by John Christopher Denner of Leipsig, Germany, in 1690, but since modified by various improvements. Its principal parts include a mouthpiece, furnished with a single beating reed, and a round tube enlarged at the end in the form of a bell. The tube is provided with eighteen openings in the sides, half of which are closed by the fingers and half by the keys. It is used extensively in military bands and orchestras. Its compass is much greater than that of the flute and its music is held in higher favor.

CLARK, Alvan, optician, born in Ashfield, Mass., March 8, 1808; died in Cambridge, Aug. 19, 1887. He was the son of a farmer, became an engraver, then a portrait painter, and in 1845 a manufacturer of telescopes. He ranks among the principal manufacturers of large achromatic lenses. The first large order he received was for an eighteen-inch object glass for the University of Mississippi, and in 1870 he began a twenty-six-inch glass for the naval observatory at Washington. The Russian government placed an order with him in 1879 for a thirty-inch glass for the imperial observatory at Pultowa. Another large glass was made for the University of Virginia, and a thirty-six-inch object glass for the Lick Observatory in California, in 1886.

CLARK, Alvan Graham, son of Alvan Clark, born at Fall River, Mass., July 10, 1832; died June 9, 1897. He was educated at the public schools in Cambridge and learned the trade of a machinist. Later he worked with his brother in East Cambridge at lens making, and became a member of the firm of Alvan Clark & Sons, telescope makers, in 1852. In 1870 he went to Spain to observe a total eclipse, and eight years later went to Wyoming for the same purpose. He was awarded the gold medal from the Academy of Science of France in 1862 for his discovery of the companion star of Sirius. He made several improvements in telescopes, and in 1894 completed the forty-inch glass for the University of Chicago. The telescope in which this glass was placed cost $500,000, and is now in Yerkes Observatory, Geneva, Wis.

CLARK, Champ, statesman, born in Anderson County, Ky., Mar. 7, 1850; died Mar. 2, 1921. He studied in the public schools and afterward attended Kentucky University and Bethany College. Subsequently he studied law at the Cincinnati Law School and in 1873-74 was president of Marshall College, W. Va. He removed to Louisiana, Mo., where he was city attorney, and later served as prosecuting attorney in Pike County. In 1892 he was elected to Congress as a Democrat, serving one term, and was again elected to Congress for terms beginning in 1897 and ending in 1921. He was chairman of the Democratic national convention at Saint Louis in 1904, and served several terms as speaker of the house of representatives. In 1912 he was prominent as a candidate for President.

CLARK, Charles Heber, author, born in Berlin, Md., July 11, 1841. He attended the University of Georgetown, D. C., and in 1865 engaged in journalism, writing largely under the pseudonym of Max Adeler. For ten years he was secretary of the Manufacturers' Club in Philadelphia, Pa., and edited the official organ of that association. His writings include many editorials and contributions on economic subjects, while his books are chiefly humorous. They include "In Happy Hollow," "Desperate Adventures," "The Quakeress," and "Out of the Hurly Burly." He died August 10, 1915.

CLARK, Francis Edward, clergyman and author, born in Aylmer, Quebec, Sept. 12, 1851. He graduated at Dartmouth College in 1873 and studied in Andover Theological Seminary. In 1876 he was chosen pastor of a Congregational church at Portland, Me., and in 1883 was called to a like position in South Boston. He organized the Williston Young People's Society of Christian Endeavor and was president of the United Society of Christian Endeavor. His "A New Way Around the World" is an interesting account of a trip on the Trans-Siberian railway. Among his writings are "World-wide Endeavor," "Fellow-Travelers," "The Everlasting Arms," "Looking Out on Life," and "Training the Church." He died May 26, 1927.

CLARK, George Rogers, soldier and pioneer, born near Monticello, Va., Nov. 19, 1752; died Feb. 18, 1818. He became a surveyor and settled in the valley of the upper Ohio River. In 1774 he served against the Shawnees and the following year settled in Kentucky, which he helped to organize as a county of Virginia. In 1777 he undertook the conquest of Illinois, which was then occupied by the French and had a number of British outposts. He captured Kaskaskia and compelled the British at Vincennes to capitulate, and subsequently conducted a campaign in Ohio and Virginia. In 1782 he destroyed several Indian settlements on the Miami and Scioto, was raised to the rank of brigadier general of Virginia militia, and in 1793 accepted a commission in the French army against the Spaniards, who held a number of districts on the Mississippi. Though his services were of great value to the United States during the Revolution, he died in poverty.

CLARK, Jonas, patriot and clergyman, born in Newton, Mass., Dec. 25, 1730; died in Lexington, Nov. 15, 1805. He graduated at Harvard in 1752 and became pastor of a church in Lexington, where he spent his entire life. He rendered valuable services in the Revolutionary War, and near his house the first blood was shed on April 19, 1775. When he saw the dead patriots he exclaimed, "From this day will be dated the liberty of the world."

CLARK, Latimer, electrical engineer, born at Great Marlow, England, March 10, 1822; died Oct. 30, 1898. He began railway engineering at the age of twenty-five years, and with his brother Edwin was engaged in connection with the construction of the Britannia tubular bridge over the Menai Strait. Soon after he entered the employ of the Electrical Telegraph Company, with which he held positions a number of years. In 1853 he was the discoverer of the fact that low tension and high tension currents travel at the same rate. He became engineer to the Atlantic Cable Company in 1859. In 1861 he read a paper before the British Association, in which he suggested the familiarly known *ohm, farad,* and *volt* as electrical terms. He originated what is known as the *Clark's standard cell,* and superintended the submergence of over 100,000 miles of cables in different parts of the world. Among his published works are "Description of the Britannia and Conway Bridges," "Electrical Tables and Formulas," "Treatise on Electrical Measurements," and "Dictionary of Electrical Measures."

CLARK, William, soldier and explorer, born in Caroline County, Virginia, in 1770; died in 1838. He removed to Kentucky in 1784, settling on the site of Louisville, and entered the army for service against the Indians. Ill health caused him to resign in 1796, but he reënlisted and was commissioned a second lieutenant in 1803. President Jefferson appointed him to accompany Meriweather Lewis on the famous expedition to the mouth of the Columbia River, which they reached in 1805. In 1813 he was made Governor of the Territory of Missouri, serving until 1821, and subsequently served as superintendent of Indian affairs at Saint Louis, from 1822 until his death.

CLARK, William Andrews, capitalist and politician, born in Connellsville, Penn., Jan. 8, 1839. At an early age he went to Iowa and studied law at Mount Pleasant, and in 1863 drove a team of oxen to Montana, where he became wealthy. His investments were largely in manufacturing, mining, and banking, and he was at one time the largest owner of copper mines in the world. At the Montana constitutional convention, in 1889, he was president, and the following year was an unsuccessful nominee for United States Senator. He was elected to the United States Senate in 1899, but his election was held illegal and the Governor appointed him to fill the vacancy. Later the appointment was declared invalid and he was elected for the term ending in 1907. He traveled extensively in America and Europe, and was prominent in advocating the extension of transportation and commercial facilities of the Pacific coast states. He died Mar. 2, 1925.

CLARKE, William Robinson, educator, born in Inverurie, Scotland, Mar. 26, 1829; died in 1912. He studied at Oxford, entered the ministry of the Church of England, and was made prebendary of Wells in 1870. In 1882 he became professor of philosophy in Trinity College, Toronto, where he labored with marked success more than twenty-five years, exerting a wide influence upon the educational affairs of Canada. He was made Baldwin lecturer in the University of Michigan in 1887 and Slocum lecturer of the same institution in 1899, and was president of the Royal Society of Canada in 1900. His publications include "Witnesses to Christ," "The Anglican Reformation," "Pascal and Port Royal," "The Four Temperaments," and "Savonarola: His Life and Times."

CLARKE, Charles Cowden, author, born at Enfield, England, Dec. 15, 1787; died Mar. 13, 1877. He began his career as a bookseller in London and delivered courses of lectures on poets and dramatists from 1834 until 1854. His wife, Mary Cowden Clarke, aided him in annotating an edition of Shakespeare and in compiling "The Shakespeare Key." Among his books are "Tales from Chaucer," "Recollections of Writers," "Molière Characters," and "Shakespeare Characters."

CLARKE, James Freeman, clergyman, born at Hanover, N. H., April 4, 1810; died at Jamaica Plain, Mass., June 8, 1888. In 1829 he graduated at Harvard and four years later at Cambridge Divinity School, and became pastor of the Unitarian Church in Louisville, Ky. He published the *Western Messenger* at Louisville from 1836 till 1839. He founded the Church of the Disciples at Boston in 1841, and was its pastor until 1886. Clarke was widely known as a lecturer and writer. Among his best known works are "The Doctrine of Christianity," "Eleven Weeks in Europe," "Self-Culture," "The Doctrine of Atonement," and "Orthodoxy: Its Truth and Errors."

CLARKE'S FORK, a river of the United States, rises in the Rocky Mountains, in the western part of Montana. It flows toward the northwest in Montana, crosses the northern part of Idaho, flows through the northeastern corner of Washington, and enters the Columbia River in British Columbia, near Waneta. It is about seven hundred miles long and has abundant water power. Its headwaters are the Flathead and Missoula rivers, by which it is formed, and it passes through Lake Pend Oreille, in Idaho.

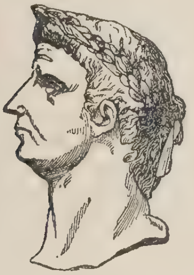
CLARKSBURG, county seat of Harrison County, West Virginia, 98 miles southeast of Wheeling, on the Monongahela River and on the Baltimore and Ohio Railway. The surrounding country produces coal, gas, and oil. It has manufactures of tinplate, glass, and pottery. The buildings include the high school, court house, and federal building. It was settled in 1774 and incorporated in 1785. Population, 1920, 27,869.

CLARKSVILLE, a city in Tennessee, county seat of Montgomery County, on the Cumberland River, and on the Louisville and Nashville Railroad. The chief buildings include the courthouse, the city hall, and the Southwestern Presbyterian University. Iron mines are worked in the vicinity. It has a large trade in tobacco and merchandise. The manufactures include cigars, clothing, earthenware, and machinery. The city is improved by electric lights, pavements, waterworks, and a sewer system. It was settled in 1780 and incorporated in 1785. Population, 1900, 9,431; in 1920, 8,110.

CLARK UNIVERSITY, an institution of learning founded by Jonas Gilman Clark (1815-1900) in 1887, at Worcester, Mass. It has a library of 112,000 volumes. The attendance is 470 students, the property value is $1,000,000, and the endowment is $5,000,000. G. Stanley Hall was its president for many years.

CLASSICS (klăs'sĭks), the writers and productions of acknowledged excellence and authority. The highest class of Roman citizens were called *classici* and a man of the highest rank was termed a *classicus.* The term *classic* was applied to writers and productions as early as the 2d century after Christ. At present it refers to the best writers and productions of Greece and Rome and to the modern works that conform to the best and most perfect standards.

CLAUDE LORRAINE (klạd lô-rān'), landscape painter, born in Lorraine, Germany, in 1600; died in Rome, Italy, in November, 1682. He lived with his brother, an engraver of wood, at Freiburg, went to Naples, and later was employed at Rome by the painter Agostino Tassi to do household drudgery and grind his colors. Subsequently he studied under Godfrey Waats at Naples and spent some time traveling through Italy, Germany, and France, settling at Rome in 1627. He soon attracted attention by his landscape paintings. Many of his productions are still in the art galleries of France, Germany, Italy, and Spain, and a number are in England. His most noted painting is the "Villa Madama," which he kept as a model, and even refused to sell it to Pope Clement IX. when he was offered an enormous price. His works have commanded high prices, even during the artist's life, for he set a high price on his productions. He was an indefatigable student of nature, was earnest, and possessed much inventive power. He watched the sunlight at various hours of the day, the dewy moisture of morning shadows, the effect of the wind on foliage, and the magical blending of the horizon, and gathered inspiration from these and similar phenomena. His best productions, besides "Villa Madama," are "Twilight," "Morning," "Noon," and "Evening."



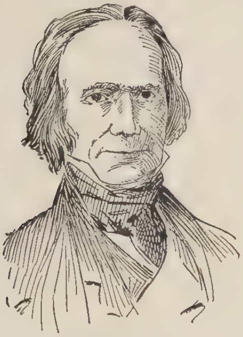
CLAUDIUS.

CLAUDIUS (kla̤'dĭ-us), **Tiberius,** Roman emperor, youngest son of Nero Claudius Drusus, born at Lyons in 10 B. C.; died from poison in 54 A. D. During his early life he was sickly and infirm. His education was neglected and cared for principally by freedmen and women. Caligula was less cruel to him on account of his supposed imbecility, but he made considerable progress in Latin, Greek, and historical studies. When Caligula was assassinated, he was found in concealment by the soldiers, who carried him forth and proclaimed him emperor. His recognition was compelled by the praetorians. At first his rule was marked by mildness and justice, but he was led by his wives, for he married four times, to acts of cruelty and extortion. His armies were sent abroad and conquered large portions of Germany, and later undertook a conquest of Britain. Mauritania was proclaimed a Roman province by the conquering armies. He made a number of internal improvements, including the famous Claudian aqueduct, which occupied 300,000 laborers for eleven years. His last wife was Agrippina, who poisoned him in 54 A. D. in order to secure the throne for her son Nero. The memory of Claudius was held sacred by the Romans, and he was deified among the most celebrated.

CLAY, a term applied to any form of earth which possesses sufficient plasticity to be fashioned like paste by the hand or the potter's lathe, when moistened with water. It is produced by the disintegration of rocks. Streams carry silt, which forms clays when deposited. When currents pass into still waters, the heavier stones drop first, next the pebbles, and then the gravel and sand, and finally the fine silt settles to the bottom and forms clay or mud. The mud, hardened by drying, becomes shale. The purest grade of clay is known as *kaolin,* of which porcelain and white earthenware are made. *Pipe clay* is a plastic and smooth clay and *flint clay* is hard and dense. *Fire clay* is found in coal measures immediately beneath the several veins of coal. It constitutes the soil of the ancient forests, the remains of which have been transformed into coal. It is used to make infusible brick. Other clays are used for making drain and sewer tile, brick, earthenware, tobacco pipes, and many other products. *Loam* is a mixture of sand and clay, *marl* contains clay and shell remains, and *shale* is a rock clay. Calcareous clay lands produce the best wheat and rye, while the rosaceous produce the best fruits. Clay is an important constituent of good soil. The manufactured products of clay produced annually are very extensive.

CLAY, Alexander Stevens, lawyer and statesman, born in Cobb County, Ga., Sept. 25, 1853. He lived on a farm and attended the public schools, and subsequently studied at Hiawassee College, where he graduated in 1875. Subsequently he taught school, was admitted to the bar, and in 1884 became a member of the Legislature of Georgia, of which he was speaker in 1886. He was elected State Senator as a Democrat in 1892 and attained to a position of influence, and in 1897 was chosen United States Senator and was reëlected in 1903. He served on numerous committees and was a leader of his party in legislation. He died Nov. 13, 1910.

CLAY, Cassius Marcellus, statesman, born in Madison County, Kentucky, Oct. 19, 1810; died July 22, 1903. He graduated at Yale College in 1832, where he was influenced to become an abolitionist and freed his own slaves, after hearing a speech by William Lloyd Garrison. He attained eminence in the practice of law and was elected to the Legislature in 1835 and was reëlected in 1837 and in 1840. He supported Henry Clay for President and opposed the annexation of Texas. For some time he published the *True American* at Lexington, in which he advocated the abolition of slavery. While serving in the Mexican War, he was taken prisoner. He favored the election of President Taylor, and supported Frémont in 1856 and Lincoln in 1860. He was sent as minister to Russia in 1861, but returned to America in 1862 and was made major general of volunteers. Later he served as minister to Russia a second time, from 1863 to 1869. In 1870 he aided the revolutionary movement in Cuba. He supported Horace Greeley in 1872, Samuel J. Tilden in 1876, and James G. Blaine in 1884. In 1894, at the age of eighty-four years, he married a seventeen-year-old ward of a poor family, in which he was opposed by his sons. Another interesting event of his life was an indictment for killing Perry White, a Negro, in 1877, who was a discharged servant, but he was acquitted by the jury.



HENRY CLAY.

CLAY, Henry, orator and statesman, born in Hanover County, Virginia, April 12, 1777; died June 29, 1852. He was the son of a Baptist minister who died when he was five years old, and his education was largely in the hands of his mother. He worked on the farm in early boyhood, and obtained a position in the office of clerk of the courts at the age of fifteen years. Later he entered a law office, was admitted to the bar in 1797, and commenced to practice at Lexington. His remarkable ability as a speaker attracted much attention, which hastened his success and brought a flourishing practice. He was elected to the State Legislature in 1803 and three years later to the United States Senate. Later he became a member of the Legislature of Kentucky and was chosen its speaker in 1808. A speech made on an important occasion caused a duel between him and a fellow-member, in which both parties were slightly wounded. He was elected to the national House of Representatives in 1811, serving as its speaker, and subsequently held the latter position four times. His energies were bent toward internal improvements, the building of roads, canals, and public buildings, being classed as a "loose constructionist of the Constitution." He was instrumental in forcing Madison into the war with Great Britain, and gave that movement ardent support. In 1813 he was chosen one of the envoys to treat for the peace finally negotiated at Ghent in December, 1814. While on this mission in Europe, in 1815, he was again elected to Congress and served continuously as its speaker until 1825. During his service in Congress he delivered a number of noted speeches in favor of the independence of the Spanish-American states of South America, which were in a state of revolution against Spain. When the war broke out between Greece and Turkey, in which the former sought freedom, he was an eager advocate of Grecian liberty.

In 1824 Clay was a candidate for the Presidency, but failed, receiving only thirty-seven electoral votes. The contest was among four candidates and for want of a constitutional majority the election went to the House, where he supported John Quincy Adams, which caused a duel between him and John Randolph. Clay became Secretary of State under President Adams. During the administration of this office he had in charge many matters of diplomacy, including the questions brought on by the Panama Congress. He was again nominated for the Presidency in 1832, and was beaten by Jackson, and a third time, in 1844, and was beaten by Polk. However, he continued as an active leader of the Whigs, and, like many other prominent men and leaders, he failed in securing popular support largely on account of his prominence in statesmanship.

Clay reëntered the United States Senate in 1849 and took the foremost part in the compromise bill of 1850, known as the Omnibus Bill. On account of this measure and various others he won the title of the "great pacificator." The Missouri Compromise was likewise advocated by him. This bill abolished slavery in all the states north of latitude 36° 30′, permitted it in Missouri, and with several other measures sanctioned slavery in the slave states. The Omnibus Bill provided that the states of New Mexico and Utah should be left to their own discretion as to slavery, and California should be taken into the Union as a slave State, while the slave trade should be abolished in the District of Columbia. He at first opposed the establishment of a national bank, but later favored it and spoke vigorously in its behalf. He is preëminent as a debater, a powerful platform orator, and a contriver of various compromise measures intended to preserve the Union. No man of his party had a larger following of personal friends, and no one ranks higher in the period often referred to as the age of American oratory.

CLAYTON (klā′tŭn), **John Middleton,** jurist, born in Dagsboro, Del., July 24, 1796; died in Dover, Del., Nov. 9, 1856. He graduated at Yale in 1815 and was admitted to the bar. He was elected to the Legislature in 1824 and to the United States Senate in 1829 and 1835, and served as Secretary of State under President Taylor. In 1845 he was again elected to the Senate and was reëlected in 1851. As an orator he took high rank. His name is connected with the Foote resolution and the Clayton-Bulwer Treaty.

CLAYTON, Powell, soldier and statesman, born in Bethel, Va., Aug. 7, 1833; died Aug. 25, 1914. He studied at Wilmington, Del., and in 1855 went to Kansas. In 1859 he was made civil engineer at Leavenworth and entered the Union army at the beginning of the Civil War, rendering efficient service in Arkansas and other states of the Southwest. In 1868 he was chosen Governor of Arkansas, served in the United States Senate as a Republican in 1871-77, and attended all the national Republican conventions from 1872 until 1896. President McKinley appointed him minister to Mexico in 1897.

CLAYTON-BULWER TREATY (bul′wẽr), a treaty between the United States and Great Britain, relating to the construction of a ship canal between the Atlantic and Pacific oceans, across the Isthmus of Panama. It received its name from the commissioners, John Middleton Clayton, on behalf of the United States, and Bulwer-Lytton (later Lord Dalling), on the part of Great Britain. It was ratified in 1860. The terms include that neither nation is to erect fortifications at or near the canal, and that these nations will not assume dominion over any part of Central America. However, the treaty was abrogated in 1901, when the Hay-Pauncefote Treaty was concluded between the two nations.

CLEARFIELD, a borough of Pennsylvania, county seat of Clearfield County, 170 miles northeast of Pittsburg. It is conveniently located on the west branch of the Susquehanna River and on the Pennsylvania and other railroads, and is surrounded by a fertile agricultural country, which contains deposits of coal, fire clay, and limestone. The manufactures include brick, piping, and machinery. It has electric lights, waterworks, and other municipal utilities. The first settlement in its vicinity was made in 1805 and it was incorporated in 1840. Population, 1900, 5,081; in 1920, 8,529.

CLEARING HOUSE, a banking institution which serves to make mutual payments between bankers on drafts and checks. Clearing houses are organized by an association of banks. The different drafts and checks received by the associated banks are brought to the clearing houses and offset one another, and only the balances are paid in money. Each bank represented has a desk at the clearing house, at which the settling clerk or clerks receive in bundles the checks and drafts payable by the bank they represent, and in return draw a statement of the demand against other banks. All the checks and other evidences of credit are noted carefully by an inspector and the separate items are examined and approved, after which the checks are returned to the respective banks by their clerks, and at a stated time the debtor banks pay to the creditor banks the balances. Clearings are made every business day, usually about 11 A. M., and the transactions are subject to revision or rectification, not at the clearing house, but in the form of verified claims filed on the succeeding day or some time later.

Clearing houses were established in France as early as 1667, the first at Lyons, but the present system did not originate until the latter part of the 18th century. The London Clearing House, established about 1775, is one of the oldest. New York City has the most important clearing house in America, established in 1853, and its average daily clearings aggregate about $913,-500,000 and the average daily balance approximates $98,090,000. Chicago has the second largest clearing house in the United States, its annual clearings amounting to 35 billion dollars, while the annual clearings in New York City aggregate 276 billion dollars. Other important clearing centers are located at Boston, Saint Louis, Philadelphia, Cincinnati, San Francisco, and Kansas City. The chief clearing houses of Canada are at Montreal, Toronto, Quebec, and Vancouver.

CLEAVAGE (klēv'āj), in geology, the direction or manner in which rocks may be split into parallel layers. The direction of planes or cleavage is frequently in the line of stratification, but differs from it in many instances. It is not difficult to determine the structure of crystallized bodies when they are broken, and on examination it is found that small polyhedrons make up the individual fragments. The phenomenon of rock cleavage is not easily determined. Some writers consider that it is due to the pressure of mechanical forces to the planes of cleavage, while others look upon it as the result of crystalline agency. Nearly all species of rock are subject to cleavage, but those of the finer grains show it to the best advantage. Slate and schist possess the property of cleavage.

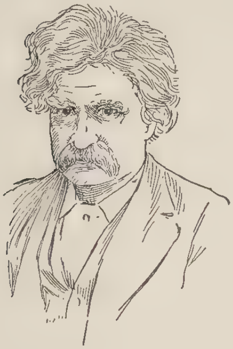
CLEBURNE (klē'bûrn), a city in Texas, county seat of Johnson County, forty-eight miles southwest of Dallas, on the Kansas City Southern, the Gulf, Colorado and Santa Fé, and other railroads. The chief buildings include the county courthouse, the city hall, and a public library. It is the seat of a college and has a fine high school. The manufactures include ice, farming utensils, and machinery. It has electric lighting, waterworks, and sewerage systems. Population, 1900, 7,493; in 1920, 12,827.

CLEMATIS (klĕm'ȧ-tĭs), a genus of plants either herbs or shrubs, usually having climbing stems. They are widely distributed throughout the different climates, but are most numerous in the Temperate zones. Many of the species now cultivated have been obtained from plants native to Europe and have large flowers of various colors, often six inches across. The root of a clematis is used by the American Indians as a stimulant to revive horses that are overcome at races. A number of different kinds are cultivated in gardens and greenhouses.

CLEMENCEAU (klȧ-män-sō'), **Eugene**, statesman, born at Vendee, France, Sept. 28, 1841. He studied medicine at Nantes and Paris, and practiced in the working districts of the latter city. In 1870 he became a member of the commission of communal education, and in 1871 was elected representative to the assembly for the department of Seine, supporting the side of the radicals. He was shut up in both sieges of Paris in 1870-71, and was suspected by the communists. As a radical he took an active interest in French politics during the presidency of Grévy. Later he helped to exclude the clergy from educational affairs and to expel the Jesuits; in the advocacy of this cause he published *La Justice*, a political newspaper. He married Mary G. Plummer, an American lady, in 1870. In 1898 he was a leading advocate for a revision of the Dreyfus case. He was elected to the Senate in 1902 and became Premier in 1917, and served as president of the Paris Peace Congress in 1918-1919.

CLEMENS (klĕm'enz), **Samuel Langhorne**, well known as Mark Twain, humorist, born in Florida, Mo., Nov. 30, 1835; died, April 21, 1910.

He attended the schools at Hannibal, Mo., and became a printer, after which he traveled from town to town until he reached New York. Later he became a pilot on the Mississippi River steamboats, at New Orleans, and in 1861 went to Nevada as private clerk to his brother, who was secretary of the Territory. In Nevada he engaged in mining, and in 1862 accepted the editorship of the *Virginia City Enterprise*. In 1865 he engaged as a reporter on the *Morning Call* at San Francisco, and visited the Hawaiian Islands as news correspondent in 1866. He accompanied a party of tourists to the Mediterranean in 1867, visiting Egypt and Palestine, and on his return published "Innocents Abroad." No less than 125,000 copies of this publication were sold in three years. He became widely known as a humorist, lecturer, and entertainer, and traveled extensively in the United States, Canada, and England. In 1895 the French humorist, Max O'Rell, challenged him to fight a duel, by which he achieved some distinction.

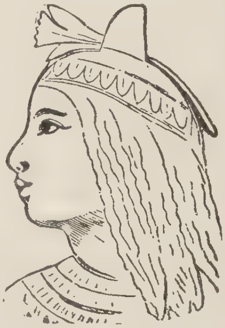

SAMUEL L. CLEMENS.

Clemens founded the publishing house of Charles L. Webster & Co., in 1884, and brought out Gen. Grant's "Memoirs." When the firm failed in 1894, he started on a lecturing tour around the world with the design of achieving success and winning back his financial standing with his inimitable humor. Among his many productions is a series of articles in the *North American Review,* in which he criticised James Fennimore Cooper's novels. His general writings include "Joan of Arc," "Sketches Old and New," "Punch, Brothers, Punch," "Prince and the Pauper," "Huckleberry Finn," "A Yankee at King Arthur's Court," "Life on the Mississippi," "Gilded Age," "Roughing it," "The Tragedy of Pudd'nhead Wilson," and "A Double-Barreled Detective Story." The writings of Mark Twain are characterized by a pathos and sympathy which are both pleasing and instructive, while, at the same time, his humor points to a moral of superior traits.

CLEMENT (klĕm'ent), the name of fourteen popes, the first of whom was Clement Romanus, who is counted one of the apostolic fathers. See **Pope.**

CLEMENT XIV., Pope of Rome, son of a physician, born near Rimini, Italy, in 1705; died Sept. 22, 1774. He studied theology and philosophy at the age of eighteen years and successfully taught these branches. He was made counselor of the Inquisition by Benedict XIV. and became a cardinal under Clement XIII. On May 19, 1769, he succeeded the latter to the papal chair. In the interest of peace with Italy, Portugal, Spain, France, and Naples, he issued the famous brief, in 1773, by which the society of Jesuits was suppressed. His extensive learning, liberality of mind, and mildness of character made him remarkable and honored.

CLEOPATRA (klē-ō-pā'trȧ), the name of several princesses of Egypt, of the house of the Ptolemies. The best known is the daughter of Ptolemy Auletes. She was born in 69 B. C., and at the death of her father ascended the throne jointly with her younger brother Ptolemy. In accordance with Egyptian custom he was to be her husband and colleague. After a few years the guardians of her brother deprived her of all royal authority and she withdrew to Syria with the view of recovering her rights by force of arms. When she was about to return with an army from Syria, Caesar and Pompey were at war in Egypt. The personal charms of Cleopatra won Caesar and he placed her upon the throne. While in battle against Ptolemy, that opponent lost his life. She now ruled with her younger brother as husband and colleague. When Caesar returned to Rome, she and her boy-husband followed him to the Roman capital, and the latter was soon removed by administering poison.


BUST OF CLEOPATRA AT DEUDERAH.

At Rome Cleopatra lived openly with Caesar, but after his assassination returned to her native country. When civil strife for supremacy broke out in Rome, she took the part of Mark Antony, with whom she had formed a close acquaintance while he was campaigning in Egypt. She equipped a galley in gorgeous style and sailed up the Cydnus River to visit him, arrayed in all the magnificence of Eastern splendor. She so fascinated Antony with her beauty and personal charms that he was forever after infatuated with her. He followed her to Egypt and lived there for some time in great luxury and splendor. Afterward he left her and married Octavia, sister of Octavianus, but soon returned to Cleopatra, who assisted him in his military and naval campaigns in Syria and on the Euphrates.

The unpopularity of Cleopatra at Rome caused Octavianus Caesar to declare war against her personally. In 31 B. C. the famous sea fight at Actium decided the fate of both Antony and Cleopatra. She fled with her sixty ships soon after the battle opened and Antony hastened to follow her to Egypt. The two were pursued by Octavianus, whose design, however, was upon the life of Antony. Cleopatra failed to charm Octavianus as she had Julius Caesar and Antony, and, rather than be carried a prisoner to Rome, she ended her life by allowing an asp to bite her arm, in the year 30 B. C. Previous to this Antony had been informed, falsely, that she had proved untrue to him, and he promptly committed suicide by falling upon his sword. Finding the report amiss, he was carried into her presence and died in her arms. She was the last of the Ptolemies of Egypt, and with her the dynasty ended. Her personal charms and literary tastes alike distinguished her, and she was praised for extensive intellectual ability. It is said that she was able to converse fluently in seven languages. Besides her son Caesarion, of whom Julius Caesar was father, she had three children by Antony.

CLEOPATRA'S NEEDLES, the name of two obelisks formerly at Alexandria, but one is now located in New York and the other is in London. They were erected by King Thothmes III., of Egypt, at the entrance of the great temple of Heliopolis, mentioned as On in the Scriptures, and near which Moses was born. After the death of Cleopatra, shortly before the Christian era, they were removed to Alexandria. The obelisk at New York was placed in Central Park in 1881. It was presented to America by the Khedive of Egypt.

CLEPSYDRA (klĕp-sĭ-drȧ), or **Water Clock**, an instrument devised by the ancient Greeks for measuring time. It consisted of one or more pipes with orifices at the bottom, and a scale of hours at the outside indicated the time in which the water flowed through the orifices. Another form consisted of a uniform flow of water through a pipe into a receptacle, which had a scale of hours to indicate the rise of the water.

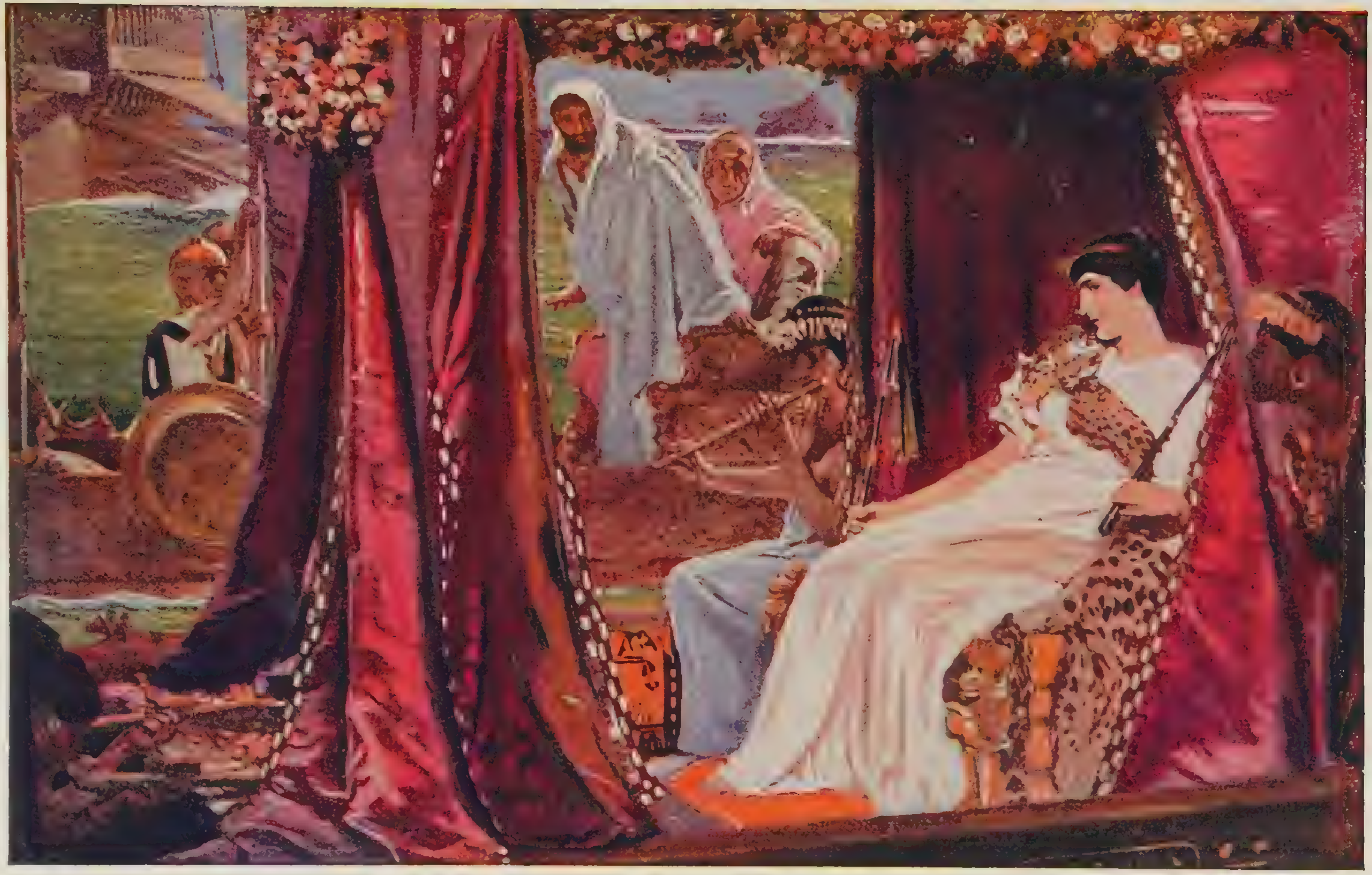
CLERGY RESERVES, the allotments of land set apart for the support of the Protestant religion in Canada. It was provided by law that every seventh lot in the township of the two divisions known as Upper and Lower Canada be included in the reserves, and the government held that the benefits were to apply to the Church of England, though other Protestant churches received some of the grants. Roman Catholics regarded the reserves as unfavorable to their religion and the Baptists and Methodists generally opposed the policy of maintaining them. Opposition grew until 1854, when the church and state were formally separated by the laws of Canada, and the lands and moneys obtained from the sales of these reserves were divided equally among the townships according to the number of their inhabitants. Upper Canada had the largest number of reserves, a total of about 2,500,000 acres.

CLEVELAND (klēv'land), a city in Ohio, county seat of Cuyahoga County, on the southern shore of Lake Erie, at the mouth of the Cuyahoga River. It is the largest city of Ohio and the third largest port of the Great Lakes, exceeded only by Chicago and Detroit. Cleveland is 250 miles northeast of Cincinnati, 356 miles east of Chicago, and 525 miles northwest of Washington. It is the focus of many importan trunk and branch railroad and numerous electric railway lines.

DESCRIPTION. The city has a lake frontage o ten miles, extends inland five miles, and has a area of fifty square miles. The site i more or less undulating, rises gradually fron the lake front, and is about 115 feet above th surface of Lake Erie. It is divided into tw unequal parts by the Cuyahoga River, known a Eastern and Western, and the portion lyin west of the river is known as West Clevelan Along the river is a low valley, in which ar located many factories, coal yards, freight depots, ore docks, and other industrial establishments. Several great viaducts and many bridge cross the river, one of which, completed in 187 is 3,210 feet long and cost $2,250,000.

The streets are wide, from 40 to 130 feet, an are beautified by elms and maples, hence Cleveland is known as the *Forest City*. Much of th paving is constructed of brick and asphalt, an in the business center a substantial grade o stone and cement blocks has been used in constructing the pavements. Superior Street, th principal business thoroughfare, is 132 feet wid and on either side has many substantial structures. Monumental Park, which is in fact th public square, is a tract of about ten acres, an from it the streets diverge in all direction Euclid Avenue, the most beautiful street, begin at Monumental Park and extends east beyon Lake View Cemetery, whence it merges int Euclid Road. This avenue has a number o business houses at the western end, but is mainl a residence street and contains some of the fines homes and most tasteful lawns in the city. Jus south of Euclid Avenue is Prospect Stree which is a noted residential thoroughfare. Cas Wilson, Jennings, Ingleside, and East Madiso streets are noted for their fine lawns and beautiful homes.

PARKS AND CEMETERIES. Rockefeller Park, tract of 800 acres, is situated in the easter part of the city, and near it are Gordon Par and Wade Park. The latter has a zoölogic garden and a statue of Commodore Perry, whic was formerly in Monumental Park. Lake Vie Park extends along the lake shore, and Brookside, Garfield, Riverside, and Shaker-Height are worthy of mention. The chief drives, besides Euclid Avenue, include Ambler, Parkwa Ridge Road, Gordon Boulevard, and Gran Public Boulevard. Lake View Cemetery is i the eastern part of the city and contains th Garfield Memorial, which is 165 feet high an cost $130,000, and in the crypt beneath are th remains of President Garfield. Monument Park contains the statue of Gen. Moses Cleaveland and the monument dedicated to the soldie and sailors. Woodland and Riverside cemeteries are beautifully improved and contai many fine statues and monuments.



(Opp. 600) CLEOPATRA AWAITING NEWS FROM MARC ANTONY

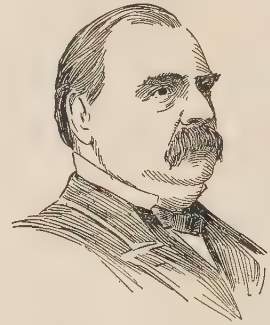
Buildings. The county courthouse, the city hall, and the post office and customhouse are the most prominent public buildings. Others of note include the Chamber of Commerce, the B. F. Keith, the Union Trust, the Cuyahoga, the Williamson, the Union Mortgage, the Guardian Trust, and the Colonial Arcade. Among the most prominent churches are the First Presbyterian, Plymouth Congregational, Saint Paul's Protestant Episcopal, and the Roman Catholic cathedral. The Euclid Avenue Baptist and the First Methodist churches are fine buildings and are centrally located. Among the principal hotels may be named the Cleveland, Statler, Euclid, New Amsterdam, Winton, Colonial, and Hollenden. The places of amusement include the opera house, the Lyceum Theater, and the Academy of Music.

Education. The city maintains an adequate number of public schools, including all of the elementary departments, as well as a number of high and manual training schools. Many private and parochial institutions are within the city. Higher and professional education is provided for by the Western Reserve University, Baldwin University Law School, Saint Ignatius College, Case School of Applied Science, Cleveland Kindergarten Training School, and Cleveland School of Pharmacy. The public library has 275,000 volumes, the Case library has 50,000 volumes, and other valuable collections are contained in many of the schools and colleges. All of the charities are well represented and many of the leading educational and scientific associations have a large membership.

Industries. Cleveland has a large trade in coal and iron ore, being a distributing point for the coal of Ohio and the product of the iron mines of Michigan and Minnesota. It has a vast trade in grain and lumber and is the largest fresh-water fish market in America. As a manufacturing city it ranks second among the centers on the Great Lakes. The petroleum refineries, shipyards, machine shops, slaughterhouses, planing mills, paint works, and clothing factories are the chief enterprises. Transportation is facilitated by railroads that reach the principal commercial centers of the central parts of the United States and Canada. A breakwater protects the harbor, inclosing about 300 acres, and the Cuyahoga River has been improved by dredging so lake steamers have convenient wharfage on this stream as well as on the lake. The wholesale trade is an important feature of Cleveland, which supplies through its jobbing houses many points on the lake and inland.

History. The city is located in the Western Reserve, a tract of land formerly belonging to the State of Connecticut, and a part of this was purchased in 1795 by the Connecticut Land Company. Gen. Moses Cleaveland, from whom the city received its name, platted a village at the mouth of the Cuyahoga in 1796. It was organized as a town and made the county seat of Cuyahoga County in 1810, and five years later was incorporated. The Ohio Canal was opened between Cleveland and Akron in 1827, and from that time dates its prosperous growth. A number of adjacent villages and towns were united with it at different times, including Ohio City in 1853, East Cleveland in 1872, Newburg in 1873, and Brooklyn and West Cleveland in 1893. It has had a constant and steady growth and since 1900 it has had a larger population than Cincinnati. Population, 1920, 796,836.

CLEVELAND, Grover, statesman, born in Cadwell, N. J., March 18, 1837; died June 24, 1908. His father, Richard F. Cleveland, was a Presbyterian clergyman, who named his son after Rev. Stephen Grover, long a minister in the Presbyterian church at Cadwell. After the death of his father, he became a clerk and assistant teacher in the New York Institution for the Blind, and started west in 1855 in search of employment. He stopped at the home of his uncle, Lewis F. Allen, and aided in compiling a volume of the "American Herd Book" at a salary of ten dollars a week. He afterward studied law, was admitted to the bar in 1859, and acted as clerk at a salary of $600 a year, a portion of which he gave to his widowed mother, who died in 1882. In 1863 he became assistant district attorney of Erie County, and formed a law partnership with Isaac V. Vanderpool. In 1870 he was elected sheriff of Erie County, and three years later became a member of the firm of Bass, Cleveland & Bissell. His logic and mastery of language gave him high standing at the bar and brought him forward as a candidate for mayor of Buffalo, in 1881, to which office he was elected by a majority of 3,530 votes. He entered the office and soon became known as the "veto mayor," owing to his fearless and wise administration in guarding against illegal and extravagant expenditure of money, thus saving nearly $1,000,000 the first six months. In 1882 he was the Democratic candidate for Governor of New York and defeated his opponent, Charles J. Folger, with a plurality of 192,854 votes. His State administration was a continuance of his policy as mayor, according to which he carried out his announced policy, that is, "to make the matter a business engagement between the people of the State and myself, in which obligation on my side is to perform the duties assigned me with an eye single to the interest of my employers."


GROVER CLEVELAND.

The national Democratic convention at Chicago in 1884 nominated him for President of the United States with a vote of 683 out of a total of 820. His Republican opponent was James G. Blaine. The canvass was remarkable for the discussion of the personal character and qualification of candidates. He received 219 votes and Mr. Blaine received 182 in the electoral college. He was nominated a second time, but was defeated by Benjamin Harrison, receiving 168 electoral votes and President Harrison receiving 233. The Democratic party nominated him a third time in 1892, and he was elected by a large majority. In the electoral college he had 277 votes, Harrison, 145, and James B. Weaver, the candidate of the People's party, 22. The most important events of his first administration are the removal of white intruders from Oklahoma by proclamation, and the expedition of a naval force to protect Americans during a revolution in Panama. Those of his second administration are the repeal of the silver act of 1890, calling for the purchase of $4,500,000 of silver bullion monthly, and the ordering of government troops to Chicago during a railroad strike to protect interstate commerce and the mail service, by which many lives and much property were saved. Another important event is the settlement of the Venezuelan boundary dispute between Great Britain and Venezuela, in which he appointed a commission of inquiry.

President Cleveland married Francis Folsom in the White House, June 2, 1886. This marriage was the first of a President in the White House. His second daughter, Esther, was the first child born in the executive mansion. Cleveland was the first of the presidents who served a second term without being elected as his own successor. His state papers and public addresses give him high standing among American statesmen, and his administration of public affairs was both wise and able. After retiring from the Presidency, he contributed to many magazines and delivered a series of lectures each year at Princeton University.

CLEVENGER, Shobal Vail, sculptor, born in Middleton, Ohio, Oct. 22, 1812; died Sept. 23, 1843. He was apprenticed to a stonecutter in Cincinnati, where he learned the art of a sculptor, and subsequently opened a studio in New York City. In 1840 he went to Rome to study art, and while there completed his noted production known as "The North American Indian." He died while returning to America. Among his best known portrait busts are those of Webster, Everett, Clay, and Van Buren. His portrait bust of Daniel Webster is considered an excellent likeness of that statesman and is used on a postage stamp of the United States.

CLICK BEETLE, the name of a family of bettles which are peculiar for their movements. Some of the species are known as skipjacks, elaters, and springing beetles. About 500 species are distributed more or less widely in North America and the family is well represented in all the continents. The *eyed elater* is a grayish-black beetle characterized by two large black spots on the thorax. The *wireworm* is a larva of the click beetle and lives at the roots of plants and under the bark of trees, frequently in rotten wood. It is so named from the sound it makes when it regains its feet by a spring, after being laid on its back on any hard substance.

CLIFF (klĭf), a slope or descent in the surface of the earth. Cliffs are formed by a dislocation of the earth's crust, or by the erosive action of water, or by volcanic disturbances. Waves carve the rocky coast cliffs by beating against the shore line, and their action is enhanced by the weathering of the rock that extends above the reach of the waves. The cliffs of canyons, gorges, and ravines are formed through the erosion of running water. Cliffs due to volcanic action are formed when the crust of the earth is fractured, a portion being elevated so as to form an abrupt cliff. Examples of this class are seen in many parts of the Rocky Mountains, where broken lava cliffs resulted from exposing the abrupt faces of fractures.

CLIFF-DWELLERS, a class of people long since extinct, though there are a number of races still dwelling in cliffs. The ancient cliff-dwellers inhabited portions of Mexico, Arizona, New Mexico, California, and Central America. Their dwellings were made in the rocky cliffs of mountains, and divers traces of them still remain. The valley of the San Juan River, in Utah and New Mexico, has many traces of these people, such as rude carvings and habitations in elevated cliffs. In many of them human skeletons, tools, utensils, and ornaments have been found. It is evident that they cultivated maize, cotton, and tobacco, and raised domestic animals. Some writers assume that they suffered by prolonged droughts and that they were finally extinguished by the Apache Indians. See **Pueblos.**

CLIFFORD (klĭf'fẽrd), **Nathan,** jurist, born in Rumney, N. H., Aug. 18, 1803; died July 25, 1881. He studied in the schools in Haverhill and Hampton, was admitted to the bar, and began the practice of law in York, Me., in 1827. He served in the State Legislature from 1830 to 1834, was attorney-general for four years, and in 1838 was elected to Congress as a Democrat. In 1846 he was made Attorney-General in the Cabinet of President Polk, and negotiated the terms of the peace treaty with Mexico. President Buchanan appointed him Associate Judge of the United States Supreme Court in 1858. He was a member of the electoral commission which decided the Hayes-Tilden controversy in 1877.

CLIMATE (klī'mât), the character of the atmosphere in regard to moisture and heat, together with meteorological conditions so far as they exert an influence on vegetable and animal life. Climate is affected by latitude north and south of the Equator and by elevations above the sea. High latitudes have perpetual snow and ice, as around the North and South poles, while a similar effect is common to the elevations on the summit of mountain chains, as the Andes, Himalayas, and Alps. Isothermal lines indicate the condition of the climate, and, owing to modifying influences, are irregular when compared to the Equator, owing to variations in altitude. Besides these, there are many other modifying influences upon climate, such as the direction and position of the coast lines of continents and islands, the depth and position of the seas, and the source and direction of winds and oceanic currents.

The climate that exists on continents is called *excessive* or *severe* when it is marked by great differences between the temperature of the winter and summer, or by extremes in heat and cold that characterize the day and the night. The interior regions of Asia and North America are the best examples of excessive climates. A good illustration of *modified* climates is that of Great Britain, which is greatly influenced by the winds of the continent and the breezes and currents of the sea. The east wind passing over the frozen steppes of Russia, in the winter, renders its climate cold and dry, while a south wind coming over the continent of Europe, in summer, is hot and dry, and a wind from the southwest brings moisture and heat. Even the effects of spent cyclones from the surface of the Atlantic is manifest in the form of rain, heat, and storm. Similar remarkable effects may be noticed in the northwestern part of North America, where the warm currents of the Pacific Ocean greatly modify the climate of Alaska and the Aleutian Islands, and the warm Chinook winds modify the greater part of British Columbia, Washington, and Oregon. A similar effect is seen in Northern Africa, where the Atlas Mountains of Algeria shut out the rainfall from the northern part of the Siberian Desert. Similar and other effects are noticed in many localities of the earth on account of the prominent modifying conditions of climate.

It is certain that the climate has undergone many distinct and marked changes in the geological ages, evidences of which abound in the fossils of rocks, and in the various formations in the different ages or periods. For instance, during the carboniferous age both animal and vegetable life seems to have been quite uniform from the Equator to the Arctic zone, hence there must have been only a moderate difference in temperature in the various latitudes, and the summer and winter seasons appear to have been very much alike. Some geologists think that the poles were once centers of great heat, which have been modified from time to time until the present state of excessive cold was reached, with conditions more favorable to animal and vegetable growth at the Equator. Others think that the slight alterations in the earth's orbit tend to produce changes in one direction for a long period of time, and then in the other for an equal period. The effects of these changes, which are quite clearly shown in geological formations, are well known.

CLINGMAN (klĭng'man), **Thomas Lenier,** public man, born in Huntville, N. C., July 27, 1812; died in 1897. He studied at the University of North Carolina, where he graduated in 1832, and in 1840 was elected a member of the State Legislature. In 1843 he was sent to Congress as a Whig. He was appointed to fill a vacancy in the Senate in 1858 and subsequently was elected to a full term, but resigned in 1861 to enter the Confederate army. He participated in the battles of Goldsboro, Drury's Bluff, Cold Harbor and Petersburg.

CLINTON, county seat of Dewitt County, Illinois, 22 miles south of Bloomington, on the Illinois Central Railroad. It has high school, county court house, and public waterworks. The industries include machine shops and grain elevators. Population, 1920, 5,898.

CLINTON (klĭn'tŭn), a city in Iowa, county seat of Clinton County, on the Mississippi River, 136 miles west of Chicago. It is on the Chicago and Northwestern, the Chicago, Milwaukee and Saint Paul, the Chicago, Burlington and Quincy, and other railroads. The chief buildings include the Wartburg College (Lutheran), the city hall, the county courthouse, and the public library. It is noted as a distributing point of lumber and lumber products, which are prepared for the market in vast saw and planing mills. Other industries include flouring mills, canning works, iron foundries, furniture works, and machine shops. Three immense iron bridges, about four thousand feet long, cross the river. Electric street railway lines connect all parts of the city. It has gas and electric lighting, pavements, waterworks, sewerage, and many fine residences. Lyons, located a short distance north of the main part of the city, was annexed to Clinton in 1895. Population, 1905, 22,756; 1925, 26,436.

CLINTON, a town in Worcester County, Massachusetts, 44 miles west of Boston on the Boston and Maine and the New York, New Haven and Hartford railroads. It has a public library of 26,500 volumes, a central high school, and a fine public park. Among the manufactures are carpets, ginghams, plaids, clothing, machinery, and utensils. The public utilities include waterworks, gas and electric lighting, and street pavements. A system of electric railways connect it with other trade centers. It has been an incorporated town since 1850. Population, 1905, 13,105; in 1925, 14,180.

CLINTON, county seat of Henry County, Missouri, 88 miles southeast of Kansas City. It is on the Saint Louis and San Francisco, the Kansas City Southern, and other railroads. The chief buildings include the high school and Baird College. It has manufactures of earthenware, flour, pottery, and machinery. Large quantities of grain, coal, and live stock are exported. It was settled in 1835 and incorporated in 1840. Population, 1920, 5,098.

CLINTON, a city in Vermilion County, Indiana, 18 miles north of Terre Haute, on the Wabash River and on the Chicago and Eastern Illinois Railroad. It has a high school, public library, and interurban railways. The industries consist of mining and manufacturing. It was settled in 1824 and incorporated in 1881. Population, 1920, 10,962.

CLINTON, De Witt, statesman, born at Little Britain, N. Y., March 2, 1769; died Feb. 11, 1828. He was the son of Gen. James Clinton and a nephew of George Clinton. His education was secured at Columbia College, and later he studied law and acted as secretary to his uncle. He was chosen to the Legislature of New York as a Republican in 1797, and became a leader of his party in the State. In 1802 he was elected to the United States Senate, but left that body to become mayor of New York City, which position he held for eleven years. Later he became State Senator, Lieutenant Governor, and then Governor. In 1812 he was the candidate of the Federalists and the New York Democrats for President and received twenty-nine electoral votes. He was an important factor in effecting internal improvements in the State of New York and urged the construction of the Erie Canal against opposition.

CLINTON, George, statesman and soldier, born in Ulster County, New York, July 26, 1739; died in Washington, D. C., April 20, 1812. He was trained for the military service by practical instruction while on a privateering cruise, and served as lieutenant in the expedition against Fort Frontenac, Canada. Later he was admitted to the bar. After serving as a member of the New York Assembly, he was elected to the Continental Congress and to the Constitutional Convention of New York in 1777. In the same year he became brigadier general in the Continental army, making a brave defense of forts Montgomery and Clinton on the Hudson River, but was taken prisoner by the British. He was the first Governor of New York, and was reëlected six times in succession. In politics he was allied with the Whigs. To his vigorous efforts were due the protection of New York against hostile Indians. He was the first to suggest the Erie Canal. He was chosen vice president of the United States in 1804, Jefferson being President. Four years later he was reëlected with Madison as President, and aided in defeating the continuance of the United States bank in 1811.

CLINTON, Sir Henry, British general, born in 1738; died Dec. 23, 1795. He was the only son of George Clinton, who was Colonial Governor of New York from 1741 to 1751. His first active service was in 1760, in the Seven Years' War, in which he won much distinction in the Hanoverian campaigns. He was sent to America in 1775 to take part in the Revolutionary War. He commanded the final charge at the Battle of Bunker Hill and gained a victory for the British, and later captured forts Clinton and Montgomery on the Hudson. In 1778 he succeeded Lord Howe as chief commander of the British forces in America, and was a leading factor in all the important movements preceding the surrender of Cornwallis in 1781, after which disaster he returned to England. He served as a member of Parliament in 1782-84. Shortly after he became Governor of Limerick and in 1793 was made Governor of Gibraltar, at which post he died. An ill feeling existed between him and Lord Cornwallis, his second in command, who desired to supersede him and charged him with inefficient service. In reply, Sir Henry published "Narrative of the Campaign in America," "Observations on Lord Cornwallis," and "Observations on the History of the American War." He was superseded in America in 1781 by Sir Guy Carleton.

CLINTON, James, general, born in Ulster County, New York, Aug. 9, 1736; died in Orange County, New York, Dec. 22, 1812. He served as captain during the War of 1756 between the English and French, rendered valuable service at the capture of Fort Frontenac, and was appointed captain commandant of four regiments to protect the frontiers of New York. He commanded in the Revolution against the British, and distinguished himself against the Indians in 1779. Later he became a member of the New York Legislature. He served as a member of the convention that adopted the Constitution of the United States, and was one of the commissioners to adjust the boundary line between New York and Pennsylvania.

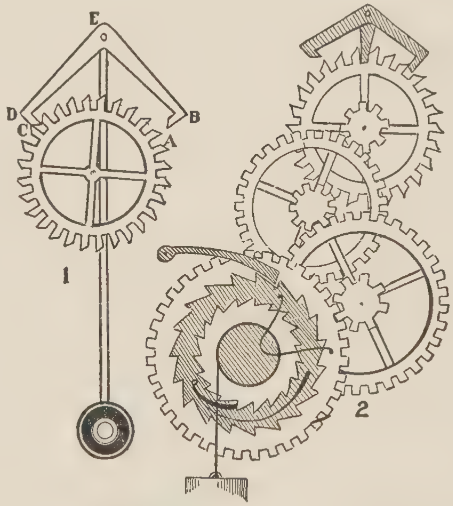
CLIO (klī′ō), in Greek mythology, one of the nine Muses, daughter of Jupiter and Mnemosyne. She presided over history and epics and is represented with a laurel crown on her head, a trumpet in her right hand, and a book or roll of papyrus in her left. Mention was first made of her by Hesiodus.

CLIVE (klīv), **Robert, Lord,** founder of British supremacy in India, born at Styche, England, Sept. 29, 1725; suicided Nov. 22, 1774. He showed aptitude for learning at an early age, and was of a fearless and combative disposition. In 1744 he became a clerk in the service of India at Madras, but owing to ill health abandoned the position and entered the military service. In August, 1751, he made an attack on the city of Arcot with 200 English troops and 300 Sepoys, and after a siege captured the city, thus laying the foundation for English supremacy in India. Owing to his efficient service he was called "The Daring in War" by the natives. He returned to England in 1753 and two years later, after a recovery of health, returned to India with the rank of lieutenant colonel. He was made Governor of Calcutta, where he avenged the Black Hole massacre and attained success against the encroachments of the Dutch. In 1760 he again returned to England and the next year was raised to the Irish peerage for his service to the government, with the title of Lord Clive, and later became Baron of Plassey. He returned to India shortly after, affairs having fallen into general confusion there, but in eighteen months he restored order and discipline, both in military and civil affairs, causing a return of prosperity to the depressed finances of the East India Company. In 1767 he again returned to England, where he was received with distinction and enthusiasm. A feeling sprang up in England that he had gathered an undue amount of wealth in Bengal, and his conduct was examined by a committee of Parliament, but he was acquitted. The form of acquittal did not satisfy him and led to his suicide in a fit of melancholy by administering opium.

CLOCK, an instrument for indicating and measuring time. The name is probably derived from the German word *Glocke,* meaning bell. Time is indicated by means of hands in hours and minutes, and in some instruments by similarly noting seconds, days, and months. In ancient times clocks similar to those now in common use were unknown. Time was measured by means of the shadow cast on an instrument by the sun, called a *sundial.* These could not show the time on a cloudy day. In some countries dials were used to indicate the time at night, called *moon dials.* Later time was indicated by means of water glasses. These instruments consisted of vessels filled with water, with small openings at the bottom through which the water passed drop by drop into a vessel beneath. On the sides of the vessels were spaces indicated by lines, and the time was marked by the height of the water. This form was not satisfactory, since water does not pass uniformly through an opening, and led to the invention of the *hourglass,* similar to those now used. An hourglass is shaped like a figure eight, the upper side being filled with fine sand, which passes through an opening into the lower part in a definite time. When the sand has all passed to the lower apartment, the instrument is reversed and measures time by the sand passing to the apartment formerly at the top. King Alfred the Great measured time by a gradual burning of candles on which colored rings were placed to indicate the period requisite for the flame to consume the material in the candle.

It is not known when clocks were first invented, but they are of great antiquity. Plato invented an instrument in the year 372 B. C., which indicated the hours of night upon organ pipes. Archimedes made a clockwork filled with springs and weights in about the year 200 B. C., and likewise adopted the apparatus to move toys and mechanical engines. The invention of a mechanism for regulating the speed of the going works, on a plan whereby to join wheels to a pointer which traverses the dial, is of newer date. It is not known when these mechanical features of a clock were completed, but they are thought to date from about the beginning of the 11th century A. D.

Clocks are mainly of two kinds. The style in common use is the one in which the wheels are moved by power from the uncoiling of a spring and the other kind is moved by a gradual falling of a weight, both the uncoiling of the spring and the falling of the weight being regulated by the swinging of a pendulum. The power is applied to a train of cogwheels. In eight-day clocks the train of wheels consists usually of four cogwheels. The power tends to move the wheels quickly and run down the clock with an even motion, but an escapement, fastened to the pendulum, is connected with the train of wheels. Its effect is to change the even motion into little leaps or jerks, thus governing the entire movement. The escapement is adjusted so as to articulate with the escapement wheel, the last of the train, and which usually has thirty teeth or cogs. This is shown in the illustration. As the pendulum, which is attached on the pinion E, swings to and fro, the two pallets B and D strike alternately against the cogs on the opposite sides of the escapement or balance wheel, as shown at A and C, and thus regulate the movement. Each full swing of the pendulum in an ordinary clock marks two seconds of time, and each two revolutions of the escapement wheel, one minute. The cogs of the different wheels are so arranged that the wheel to which the second hand is attached moves around once in a minute; the minute hand, once in an hour; and the hour hand, once in twelve hours. In cases



1, Escapement and Pendulum; 2, Train of wheels moved by a weight.

where days, weeks, and longer periods are indicated similar mechanisms are used. At the beginning of the 13th century clocks were placed in church towers, and are now frequently seen in public buildings and churches.

Among the most remarkable clocks are those in great churches. These usually require large pieces of mechanism to overcome friction. The clock in the tower of Trinity Church, New York, is wound by a crank which is turned about 800 times in winding the clock. In Strasburg, Germany, the clock in the cathedral is one of the most noted ever made. It shows the motion of the planets and the sun, and marks the minutes, hours, days, months, years, and the important festivals of the year. It contains many figures moved by machinery. The statues of four old men are located in the upper part and strike the quarter hours. At every quarter hour death comes forward, but Christ meets him with a spear and drives him back. At the last quarter Christ passes inside, while death comes out and strikes the hour with a bone in his hand, which is followed by beautiful chimes.

American inventions have revolutionized the manufacture of clocks. Those produced largely by the Waterbury Clock Company and other similar manufacturers more nearly resemble watches than clocks, and they have been exported to every country in the world. Electrical clocks were manufactured as early as 1840, but they have been greatly modified and improved in recent years. In these clocks one accurate clock is connected by wires with others, which are controlled and kept in exact time by the first. The principal clock has a pendulum that makes and breaks a circuit at stated intervals; and all the other clocks in the series beat the same time. They are used extensively in offices and public buildings. In another form of electrical clocks a master clock is attached to a number of clock faces by means of electrical currents. At the expiration of each minute an electrical impulse passes from the master clock to the different clocks in the circuit, and the hands of the clocks controlled advance one stroke each minute.

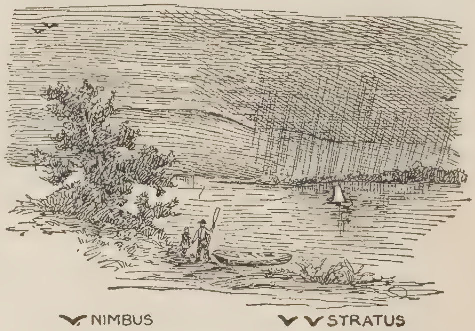
CLOISTER (klois'tẽr), a covered passage or gallery running through the walls of certain buildings, especially those used for colleges and monasteries before the Reformation. In most of the buildings of this kind one of the walls was formed by the architectural structure to which it was attached, while an open arcade or a series of windows formed the other side. The roof, which was usually vaulted, was supported by pillars and arches. Cloisters were used by the inmates of the monasteries for exercise and recreation, and many of them had an open space which contained a well and gardens. The German word *Kloster* has reference to the whole establishment, including the chapter house and the dormitories as well as the church. Many churches of Italy, Germany, England, and France retain the galleries or arched ways to which the term *cloister* is applied in a strict sense.

CLOQUET (klô-kwĕt'), a city of Minnesota, in Carleton County, 20 miles southwest of Duluth. It is situated on the Saint Louis River and on the Northern Pacific and the Great Northern railroads, and is noted for its extensive sawmills and lumber yards. The manufactures include machinery and lumber products, such as shingles, furniture, and wood pulp. It has a number of excellent schools, waterworks, electric lights, and a growing trade in manufactures and merchandise. Population, 1920, 5,127.

CLOTH. See **Weaving.**

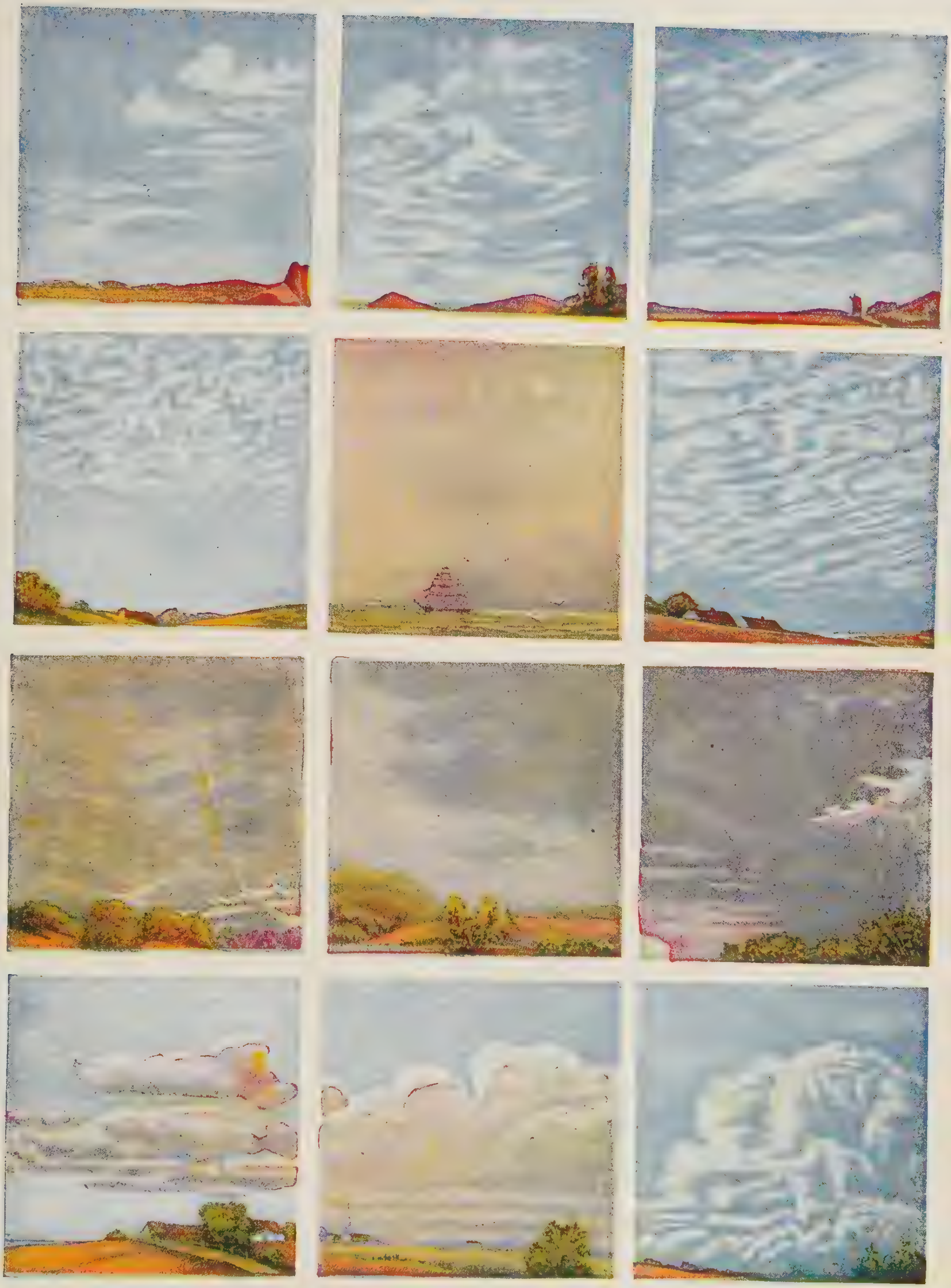
CLOTHES MOTH, the name applied to several species of moths, the larvae of which are harmful to furs, woolen, cloths, feathers, and stuffed animals. Exposure to light and the application of turpentine are good preventives.

CLOUD, a mass of vapor condensed into minute drops, differing from fogs chiefly in that the drops float in higher regions of the atmosphere. Clouds and fogs are derived from vapors that rise from the moist earth, from fresh water, or from the sea. The minute drops of water that constitute clouds and fogs are formed of a substance about 800 times heavier than air, and are prevented from settling rapidly by the resistance of air. The minute size of drops renders this possible. Whenever they exceed a certain size, they fall as rain or snow. The warmer air usually carries the greater amount of moisture, and, when coming in contact with colder air, the clouds or fogs result. On the contrary, clouds and fogs disappear on the approach of a warm, dry wind.



CLOUDS.

Clouds are generally higher during the day than during the night, and are higher in the tropics than in the polar regions. The mean height in winter is from 1,300 to 1,500 yards, and in summer from 3,400 to 4,400. They often exist at a distance of 250 yards above the ground, and as high as 7,500 yards, while the *cirri,* light forms of clouds, attain a much greater elevation. Although clouds generally appear stationary, they are really descending slowly, but their lower parts are dissipated by air more highly heated and their upper portions



(Opp. 606)

CLOUDS.

1. Cirrus.
2. Cirrus.
3. Cirro-Stratus.
4. Cirro-Cumulus.
5. Alto-Stratus.
6. Alto-Cumulus.
7. Strato-Cumulus.
8. Nimbus.
9. Nimbus.
10. Cumulus.
11. Cumulus.
12. Cumulus-Nimbus.

become increased by fresh condensations. For this reason their descent is disguised, giving them a stationary appearance. All are more or less charged with electricity, some positively and others negatively, but their tension is greatest during a thunder storm. Clouds carry the moisture needed by plants from the sea, and distribute it over the vast interior of islands and continents, where it falls in the form of rain, snow, or hail.

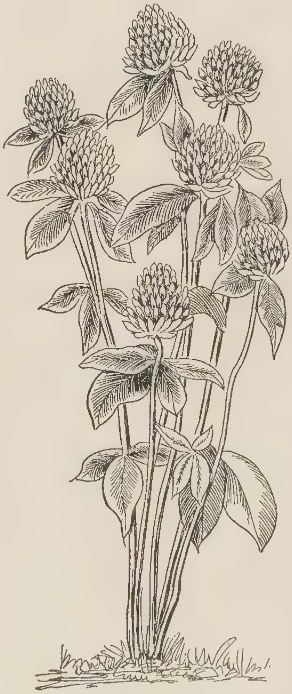
Clouds are classified in four primary forms: the *cirrus,* the *cumulus,* the *stratus,* and the *nimbus.* Cirrus clouds consist of feathery masses of condensed vapor that are suspended in the higher regions of the atmosphere. They were so named from their resemblance to a lock of hair with fiber diverging in all directions. Owing to their elevation, the moisture is thought to consist of ice particles. The halos or circular bands of light around the sun are caused by light passing through cirrus clouds. Cumulus clouds are denser than the cirrus, and are formed in the lower regions of the air, where the quantity of vapor is greatest. They consist of irregular heaps and rounded masses with moderately broad bases. They originate from ascending currents of air which have their moisture condensed by the cold produced by expansion and elevation. They are seen more frequently during the hotter part of the day at a height seldom exceeding two miles.

The stratus clouds consist of long, horizontal sheets or bands. They are seen more generally in the morning and evening, when the ascending currents are weak, and are caused by gradual settling of the cumulus and other clouds. The stratus clouds are the lowest, often falling to the surface of the earth and becoming a fog. The nimbus are the storm clouds from which rain falls. They may be formed by any of the various clouds coming together or collecting. The nimbus clouds are usually seen as a dense cloud spreading out into a cloud of cirrus with a shower passing beneath. They are the least attractive among the clouds, but are the only ones attended by the splendid phenomenon of the rainbow, seen only when drops of water fall to the earth in the form of rain. Besides these several classes of clouds, there are several secondary forms, known as the *cirro-stratus,* the *cirro-cumulus,* and the *cumulo-stratus.* These are modifications of the other forms.

CLOUDBERRY, a plant of the same genus as the dewberry, distributed more or less widely in America and Europe. It grows to a height of eight or ten inches, has few leaves, bears large white flowers, and produces an orange-red fruit with an agreeable flavor and about the size of a dewberry. It is confined chiefly to the moors of Great Britain and the central part of Europe, but is very abundant in Sweden and Norway, where it is highly valued in making preserves.

CLOUD-BURST, the name applied to a very heavy local rain, chiefly when the rainfall exceeds the rate of ten inches per hour and not less than six inches fall during the unusually heavy precipitation. Cloud-bursts occur at rare intervals on the eastern slope of the Appalachian Mountains, especially in the region lying between Georgia and New York, where heavy floods follow excessive rains of a local character. They occur more or less frequently on the coast of Washington and British Coumbia, in the valley of the Amazon, and on the southwestern coast of Chile. It must be noted that there is a difference between a heavy rain and a cloud-burst, since the former covers a reasonably large area while the latter is confined to a small area, usually a few acres, and is thought to be due to thunderstorms or to the fact that rapidly ascending currents hold a mass of water within the cloud for a brief time, after which it falls suddenly to the earth. Cloud-bursts on the eastern slope of the Rocky Mountains are accompanied by heavy thunderstorms and fill the dry channels with large quantities of water, causing destructive mountain torrents to sweep across the valleys below.

CLOVER (klō'vẽr), or **Trefoil,** the name of various plants of the pea family and of the genus *Trefolium.* There are no less than 150 species, some of which are weeds, but many are valuable food of animals and serve a useful purpose in increasing the fertility of soil. The red clover is a biennial, consisting of several kinds. It is sown with oats, barley, or other grain in the fall or spring, and bears a full crop the succeeding year. The Dutch clover bears a white flower, is a perennial, and is sown with various grasses when intended as permanent pasture for sheep. The French clover ripens early, is an annual, and is useful in pasturage. Timothy, rye grass, and other species of grasses are sown with clover, being then cut for hay. Several species are useful in bee culture, their flowers being rich in food for the production of honey. Many of the poorer and exhausted lands may be redeemed and fertilized by clover sown with grains and plowed


RED CLOVER.

under when six to ten inches high. Alsike or Swedish clover has long been cultivated in the southern part of Sweden. It is recommended for cold climates and as suitable for cultivation in moist and heavy soil. It is similar in growth and structure to the red clover, and is cultivated extensively in North America and Europe. The red clover is the best for hay, while the white clover, when mixed with grasses, serves the best purpose for pasturage. Caterpillars and burrowing quadrupeds are common enemies to clover. They destroy it either by eating the foliage or by damaging its roots.

CLOVES (klōvz), the unexpanded dried flowers of the clove tree, used as a pungent aromatic spice. The tree is of the myrtle family and attains a height of from fifteen to thirty-five feet, being an evergreen with leaves from three to five inches long. Its flowers are of a purple color. The value of cloves is due to the oil of cloves, which constitutes about one-sixth of the whole weight. It has an acrid taste and a characteristic odor. It is used as a medicine, especially as a stomachic and to stimulate the appetite, and in cookery is prized for flavoring dessert dishes. The tree was first discovered by the Dutch in the Moluccas, but is now cultivated in India, Zanzibar, Ceylon, and the West Indies

CLOVIS (klō'vĭs), King of the Franks, born in 465 A. D.; died at Paris, France, in 511. He was the grandson of Merovig, from whom the Merovingian kings take their name. In 481 he succeeded his father, Childeric, whose capital was at Tournay. Five years later he conquered the Gallo-Romans, and gained dominion over the entire country between the Somme and the Loire. He married Clotilda of Burgundy in 493, and under her influence became a Christian. His power and fortune increased from this time, and through him France became a Christian nation. He was noted for his character of energy, fierceness, and cruelty in war. After his death the kingdom was divided among his four sons, Clothaire, Clodomir, Childeric, and Theodoric.

CLUB, an association of persons combined for the promotion of a common object, whether social, political, or otherwise. The name probably comes from knot, meaning a knot or gathering of persons. The earliest club of London was organized in the beginning of the 17th century, at Mermaid Tavern, on Friday Street. It numbered among its distinguished members William Shakespeare, Sir Walter Raleigh, Fletcher, Beaumont, and Sheldon. Ben Jonson was a prominent figure at the club that met near Temple Bar. The Literary Club, established in 1760, numbered among its members Burke, Goldsmith, Boswell, and Johnson. Clubs and kindred associations are maintained at present in all the countries, especially in those of Europe and America, and the larger organizations are centered in the cities.

The club life of America has been greatly enlarged within the past twenty years. Every large city has one or more important buildings erected especially as the quarters of some prominent club, such as the Illinois Club of Chicago, the Metropolitan Club of New York, and the Hunt Club, Cote des Neiges, of Montreal. Clubs of this class usually have reading rooms, apartments for bathing and playing various games, and rooms designed for meetings of a business nature. Many men's clubs admit women as visitors, but a large number of clubs are maintained distinctly for women.

Women's clubs are numerous in all the cities of Canada and the United States, and interest themselves in religious, professional, temperance, suffrage, social, educational, and other lines of study. In some of the larger cities these clubs maintain reading rooms and excellent libraries. It has been observed that the clubs of both men and women serve a useful purpose in modern civilization. They are aiding materially in philanthropic and educational lines, and thereby tending toward a betterment of humanity.

CLUNY (klü-nê), or **Clugny**, a town of France, in the department of Saône-et-Loire, twelve miles northwest of Maçon. It is situated on the Grône River, in a valley between two mountains, and has extensive manufactures of pottery. Cluny is noted chiefly for its history in connection with a number of monasteries. It was a small village until 910, when an order of the Benedictine monks was founded here, and it had fully 2,000 monastic communities prior to the French Revolution. They were known as the Monks of Cluny, or the Congregation of Cluniac Monks, and had establishments in France, Spain, England, Italy, and other countries of Europe. The Abbey church at Cluny, one of the finest monuments of the Middle Ages, was destroyed in 1789.

CLYDE (klīd), a river of Scotland, flowing westward a distance of 106 miles. A number of important cities are on its banks, including Glasgow, Bothwell, and Lanark. Near Lanark are four famous falls. The river has been deepened and made available for steamboats; the first large steamboat launched in Europe was on the Clyde in 1812. Near the mouth it widens into the Firth of Clyde. The basin drained by it contains rich mineral deposits and fertile soil, and the manufacturing centers upon its banks are among the most important in Scotland.

CLYTEMNESTRA (klī-tĕm-nĕs'trȧ), a personage mentioned by Homer as the daughter of King Tyndareus and Leda and the half-sister of Helen. She became the wife of Agamemnon and during his absence at the siege of Troy bestowed favors upon Aegisthus. She murdered her husband on his return, and, together with her paramour, ruled Mycenae for seven years. Both she and her lover were killed by her own son, Orestes.

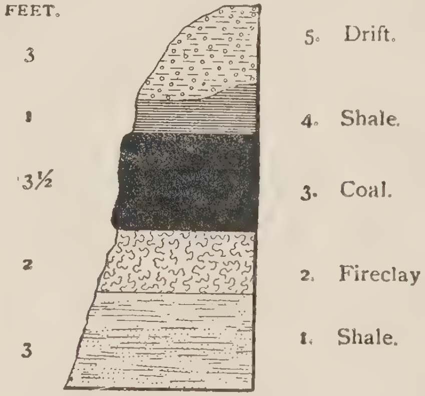
COACH, a four-wheeled closed carriage for private or public conveyance. In ancient Rome they were constructed in the form of both covered and uncovered carriages and constituted the chief means of conveying passengers. At present these vehicles are built largely for four passengers in the inside, and in some countries contain arrangements for ten or twelve on the outside. In the early history of America, especially before the Revolution, regular lines of coaches and stages were maintained to convey passengers and goods between the largest cities. Transportation of this kind is still available in the sparsely settled regions of the western part of the United States and the northern and western sections of Canada. However, coach conveyance has been largely superseded by railways, automobiles, and street cars. See **Carriage.**

COAL, a carbonaceous mineral of a black, shiny, or dull color, and used extensively for fuel. It is composed of about seventy-five per cent. of carbon and contains hydrogen, oxygen, a small per cent. of nitrogen, and small quantities of earthy impurities. It is formed of compressed and chemically changed vegetable matter derived from luxuriant growths during former geological ages. The stems, leaves, and spores of jungle growths accumulated, and hydrogen and oxygen were evolved with some of the carbon. The volume was reduced so as to form about one-ninth to one-eighteenth of its original bulk, the relative proportion of carbon was increased in the mass, and eventually the whole was solidified into a decomposed vegetable pulp very much like peat. The constituents in every hundred parts of dry vegetable matter were about forty-nine per cent. of carbon, six per cent. of hydrogen, and forty-five per cent. of oxygen. In decomposition, which occurred under water, it retained most of the carbon, together with parts of the hydrogen and oxygen.

The different kinds of mineral coal are divided by Dana into *anthracite, bituminous coal, cannel coal, lignite coal, earthy brown coal,* and *mineral charcoal.* Anthracite, bituminous, lignite, and cannel coal are the kinds marketed most extensively. Anthracite coal contains about ninety per cent. of carbon, burns with little flame, and is much used in kilns, furnaces, and by blacksmiths. Bituminous coal has more or less bituminous matter and is commonly used for fuel in heating and in engines. Cannel coal has an earthy appearance, burns with a bright flame, and is used extensively in gas making. The lignite or brown coal contains only about fifty per cent. of carbon and is not used extensively for manufacturing purposes. However, it is a valuable fuel in sections where other grades of coal are not found, as in North Dakota and some sections of Saskatchewan, and burns easily when an extra draft of air is admitted to the stove.

In many of the coal fields there are from one to four veins, with a thickness of from two to fifty feet. It is not often that all the veins are workable, nor are all of them of equal value. Many deposits consist of drifts, or pockets, and others are in great veins and underlie large tracts of country. The formations common to the coal fields, including both the coal and the intervening rocks, are known as the *coal measures.* The methods of mining differ with the thickness of the veins, the class of coal, and the character of the roof, or rocky formation covering the deposits. In many localities the vein crops out at the hillsides and the coal may be easily secured, while in others shafts are sunk several hundred feet and the coal is hoisted by means of steam or electric power. The output of bituminous coal greatly exceeds all others, but the anthracite is the most valuable and is regarded the best for many purposes.

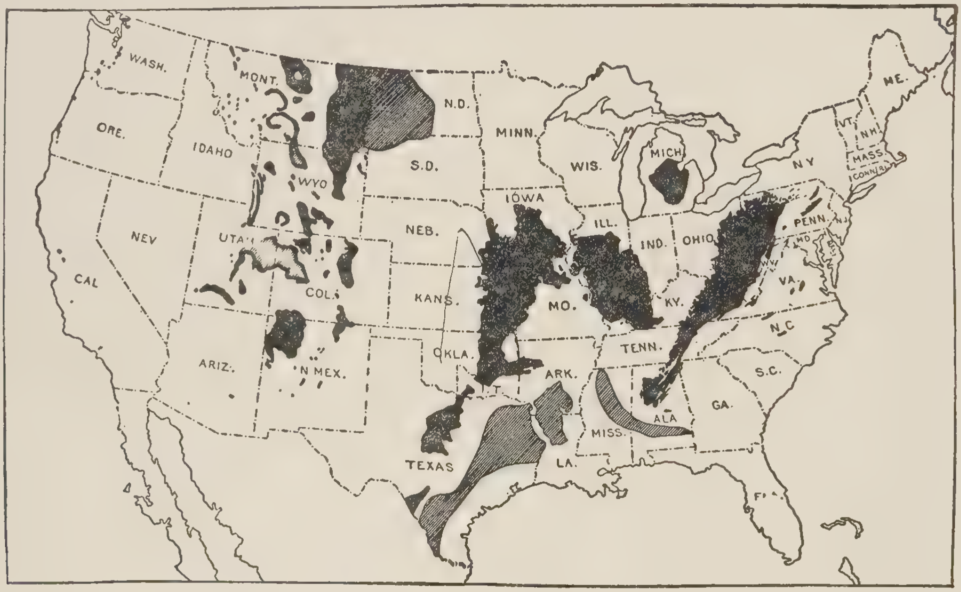
Coal was not known to the early ancients. It appears to have been used in 852 A. D. in England, but was not known to the Britons before the Roman invasion. For a long time it was thought to be injurious to health, and a common prejudice prevented its entering largely into a fuel material in the avenues of manufacture and household economy. It is now used extensively by all civilized people, and is found widely distributed in all the continents. The United States, Great Britain, Germany, Austria-Hungary, and Russia are among the greatest coal-producing countries in the world. Coal deposits are found in thirty-five of the states and territories of the Union, and the products in twenty-nine have reached commercial quantities. Pennsylvania, West Virginia, Illinois, Ohio, Alabama, Indiana, and Colorado, are the leading coal-producing states. The annual production of the United States aggregates about 601,583,762 tons, valued at about $1,543,600,000. Besides, the deposits of the colonial possessions, particularly those of the Philippine Islands, are known to be of great extent. Canada has ex-



COAL STRATUM.

tensive deposits of coal and has an annual output of about 15,000,000 tons. The deposits are chiefly in British Columbia, Nova Scotia, New Brunswick, and Alberta.

COAL TAR, or **Gas Tar,** a product obtained in the manufacture of illuminating gas from tar. It is a dark-colored, opaque liquid, is somewhat heavier than water, and has a disagreeable odor. Coal tar is made up of many compounds, including anthracene, benzine, creosote, ammonia, xylene, naphtha, and carbolic acid. It is used in making several kinds of dyes and aniline colors and in the manufacture of alizarin and salicylic acid. Coal tar formerly was considered a waste material, but it now constitutes the source of many substances valuable in science and the industries. It is used as it comes from the factory as a substitute for paint in coating shingled roofs and to protect wood from rotting, especially such as posts and the portions of telegraph poles put in the ground.



COAL AREAS OF THE UNITED STATES.
(The black are bituminous and anthracite and the shaded are lignite.)

COASTAL PLAIN (kōst'al), the name generally applied to the lowlands bordering on the sea. The most noted region of this character in North America stretches from New York Bay, along the Atlantic Ocean, to the Gulf of Mexico, in Florida, whence it extends along the northern and western coasts of that body of water to the state of Vera Cruz in Mexico. It varies in width from 20 to 200 miles, but extends inland considerably farther along the streams, especially in the Mississippi Valley, where it penetrates north to the mouth of the Ohio River. A rise known as the Fall Line marks the eastern boundary of the Atlantic coastal plain, due to the upheaval of rocks near the foothills of mountains, and in many places the streams pass over precipices and form cataracts, such as those in the James River at Richmond, Va., and in the Potomac at Washington, D. C., below which cities these streams are navigable. The formations of the coastal plain include those deposited during the Pleistocene, Neocene, Eocene, and Cretaceous periods, and retain their position quite like that acquired during deposition, but are more elevated than originally on account of being uplifted above the ocean.

COASTING, an outdoor pastime originated in Russia, and next to skating one of the most popular winter sports in the colder parts of the temperate regions. It consists of sliding by means of a sled down an inclined grade or bank covered with snow or ice. The sleds are made in a variety of forms, frequently of a framework of iron or of solid board. In the former the runner is wholly of iron and extends forward and upward in a curve, while wooden runners are usually shod with steel. Coasters may either sit or kneel in making the trip, or may lie so as to steer with one leg. Coasting may take place on a hillside or on an artificial embankment or grade, though places used for public traffic cannot be used for this purpose. See **Toboggan.**

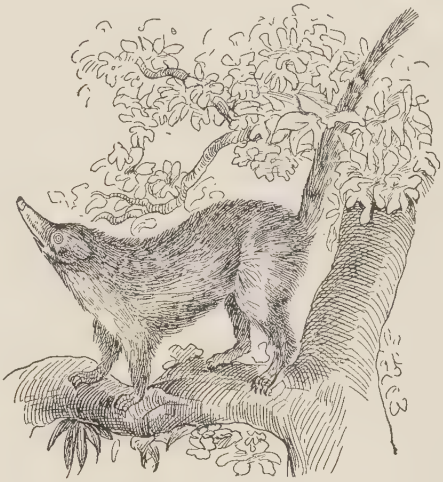
COAST RANGE, a range of mountains in California, extending from the northern to the southern part of the State, and trending parallel to the coast. At the southern extremity are San Bernardino Mountain, 11,580 feet above the sea, and San Jacinto Mountain, 10,987. The range is about forty miles wide, is rich in minerals, and contains some beautiful and fertile valleys, among them the Santa Clara, Los Angeles, and Sonoma valleys. An extension of this range penetrates northward through Oregon, Washington, and British Columbia, where it merges into the Cascades on the east and the Island Range on the west. Most of the mountains belonging to the Coast Range are steep and rocky, but the region has fine forests and several passes penetrate the system.

COAST SURVEY, a survey of the coast of the United States, first recommended by President Jefferson in 1807. By an act of Congress the President was authorized to cause the coast to be accurately surveyed and a chart of each part to be prepared for future reference. The work was not commenced until 1817, when E. R. Hassler, a German of Switzerland, was secured to begin the surveying and mapping. Owing to a want of suitable appropriations, the work was not prosecuted with much success until 1832, when Professor Hassler was authorized to employ astronomers to carry forward the enterprise with vigor. He remained in the work until his death, in 1843, when he was superseded by A. D. Bache, who continued to superintend operations until his death in 1867.

Since 1867 the coast and geodetic survey has been promoted without intermission under competent superintendence. It is now a bureau under the Department of Commerce and Labor. The coast lines of the United States, exclusive of Alaska, reach a total of 7,050 miles, and, including the numerous indentations of bays and gulfs, aggregate a total length of 29,350 miles. The coast survey has for its object to determine the position of various points along the coast by accurate methods, to secure a definite knowledge of the coast line and features of the land, to survey the channels and shoals near the shore, and to note the effects of currents, tides, and winds upon navigation and the bottom of the sea. The work is one of vast importance to navigation and commerce, and by means of it many advantages have been obtained for the American shipping enterprises. Besides saving many lives, it has been the means of shortening routes, avoiding dangers, and making travel by water much more efficient and profitable.

COATESVILLE (kōts'vĭl), a borough of Pennsylvania, in Chester County, forty miles west of Philadelphia, on the Pennsylvania and the Philadelphia and Reading railroads. It is located on Brandywine Creek, is surrounded by a fertile country, and has a large trade in produce and merchandise. The manufactures include silk and woolen goods, ironware, boilers, and hardware. The waterworks are owned and operated by the municipality. Coatesville was settled about 1800 and has been incorporated since 1867. Population, 1920, 14,515.

COATI (kō-ä'tē), or **Coati-Mondi,** a genus of carnivorous animals native to the tropical regions of South America and Mexico. The *Mexican coati* has a brownish-gray color and is found from Panama to southern Mexico, while the *red coati* is native to the northern part of South America. Both are closely allied to the raccoon and have an elongated snout, which is used in rooting up the earth when in search of worms and insects. The tail is long, covered with hair, and usually held erect. These animals have coarse hair, are about three feet in length, and easily climb trees.


MEXICAN COATI.

COBALT (kō'bŏlt), a metal used to form compounds of commercial importance. It is brittle and compact, may be easily reduced to powder, and has a greenish-white or a steel-gray color. Cobalt is not found in a pure state, except in meteorites, but occurs with lead, iron, and other minerals. The most important American productions come from Mine la Motte, Mo., and Cobalt, Ont. Cobalt, when heated with alumina, yields a pigment known as *cobalt blue,* or *cobalt ultramarine.* The oxide of cobalt is used by enamelers and to produce a fine blue glaze on porcelain.

COBALT, a city of Ontario, in the Nipissing District, 330 miles north of Toronto, on the Temiskaming and Northern Ontario Railroad. It is in a rich cobalt and silver district and has been growing rapidly since 1903. It has several hotels, schools, churches, and industrial plants. Population, 1921, 5,838.

COBB (kŏb), **Cyrus,** sculptor and painter, born at Malden, Mass., Aug. 6, 1834; died Jan. 29, 1903. He graduated at East Boston and the Boston University Law School. His paintings include "Jesus Condemned" and "Warren at the Old South." He wrote "Thirty Sonnets on the Masters of Art" and "The Veteran of the Grand Army."

COBB, Darius, twin brother of Cyrus, painter and writer. He graduated from the same schools. His productions include a number of excellent paintings and writings. Among the most noted paintings are "Christ before Pilate" and "Washington on Dorchester Heights." In connection with Cyrus, he produced a painting entitled "The Last Supper." He wrote many choice productions in poetry and prose for various periodicals, and was editor of the *Boston Traveler.* He died April 23, 1919.

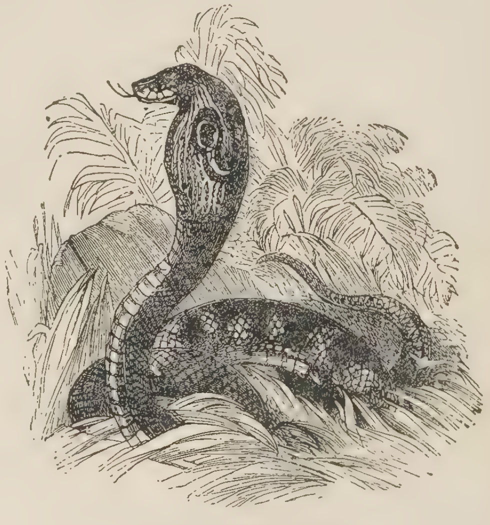
COBB, Henry Ives, architect, born in Brookline, Mass., Aug. 19, 1859. He received a common school education and studied at the Brookline high school, Boston School of Technology, and Harvard University. Later he studied with the architectural firm of Peabody & Stearns, Boston, and soon secured several awards in competitive exhibitions. He built some excellent structures, among them the private residence of R. R. Cable; the Studebaker mansion, South Bend, Ind., and the home of Dr. McGill in Chicago. Among the public structures erected by him are the Chicago Athletic Association building, Yerkes Observatory, and forty-six buildings of the University of Chicago. He designed the fisheries building at the Columbian Exposition in 1893 and the Federal building at Chicago.

COBDEN (kŏb'dĕn), **Richard,** statesman, known as "the apostle of free trade," born at Heyshott, near Midhurst, England, June 3, 1804; died April 2, 1865. After receiving an elementary education, he was apprenticed to his uncle as a clerk in a wholesale warehouse in London. In 1832 he settled at Manchester and established a cotton factory. He was an advocate of peace for England, and favored extending foreign commerce, but opposed intervention in the affairs of other nations by military force. With this end in view he was decidedly against the Crimean War and other foreign complications. His extreme views in favor of free trade led him to oppose all duties on corn. Extensive lecture tours through England and many pamphlets on the subject aided largely in the repeal of the Corn Laws in 1846. He entered Parliament in 1841 for Stockport. Later he was elected for the West Riding of York, which he served ten years, and in 1859 was chosen to represent Rochdale. He traveled extensively in Eurasia, America, and Africa. In lectures, addresses, and by the pen he was alike forceful, logical, and persuasive. His influence in promoting free trade extended beyond the borders of his own country.

COBLENZ (kō'blĕnts), or **Koblenz,** a fortified city of Rhenish Prussia, at the junction of the Rhine and Moselle rivers. It is one of the most securely fortified cities of Germany, the castle of Ehrenbreitstein being one of the strongest points. The fortifications can accommodate an army of 100,000 men. They contain magazines capable of holding provisions sufficient to support 8,000 men for ten years, and have reservoirs sufficient for supplying water for three years. Coblenz was fortified as a bulwark of defense against France. The city has several fine schools, pavements, electric lights, and rapid transit. Among the principal buildings are the Church of Saint Castor, founded in 836, the old Jesuit College, the public market, and the town hall. It has a considerable trade in corn, mineral water, and wine. The manufactures include clothing, furniture, machinery, cigars, and Japan ware. Coblenz was the capital of the department of Rhine-Moselle under the French in 1798 and became a part of Prussia in 1815. Population, 1905, 53,897; in 1920, 56,478.

COBOURG (kō'bûrg), a city of Ontario, capital of Northumberland County, sixty-eight miles northeast of Toronto. It is located on Lake Ontario, on the Canadian National Railway, has a commodious harbor, and is important as a port of entry. The manufactures include woolen goods, clothing, machinery, carpets, and felt goods. It is the seat of an armory and several fine schools and churches. The public utilities include electric lighting, waterworks, and a number of well-improved streets. Population, 1900, 4,239; in 1920, 5,147.

COBRA DE CAPELLO (kō'brȧ dȧ kȧ-pĕl'-lō), the Portuguese name of a poisonous snake of India, meaning hooded snake. It is allied to the cobra or asp found in Northern Africa. The color is pale yellow or brownish-yellow with a tinge of bluish-white beneath. The head is broad and at its rear has nine plates, and the neck may be expanded to cover the head like a hood. It is sometimes called the *spectacled snake,* owing to the appearance of a pair of barnacles on the neck that resemble spectacles, when the neck is expanded. It is from four to six feet long, is sluggish in habits, and is easily killed. Its food consists of lizards, eggs, frogs,



COBRA DE CAPELLO.

birds and small reptiles. It is an excellent swimmer and delights to invade the water in search of food. The bite is exceedingly poisonous, recovery from it being rare and death often resulting instantly or within a few hours. It is estimated that several thousand natives of India die from the bite of this snake annually. The poison is secreted in a gland located in the head of the serpent, and flows through a cavity of the tooth into the wound when the animal compresses its mouth upon any object. The government pays a bounty on the cobra head in order to extinguish it, but it is held sacred by some of the Hindu people, and is protected by them as a being that has power to injure. Indian jugglers charm the snake and have it serve their purpose in giving exhibitions. The animal may be taught to perform by music and keep time by swinging its head and body to the delight of spectators.

COBURG (kō′bo͝org), capital of the duchy of Saxe-Coburg-Gotha, Germany, on the Itz River, a tributary of the Main. It is noted for its palace of the Duke of Saxe-Coburg-Gotha and the ancient castle of the dukes of Coburg. In this castle Luther occupied apartments for some time, his bedstead and pulpit still being objects of interest. The public library has 60,000 volumes. It has manufactures of clothing, woolen and linen fabrics, and porcelain. The public utilities include electric street railways, a public park, and waterworks. Coburg was made the capital of Saxe-Coburg in 1735. Population, 1905, 22,488; in 1920, 24,844.

COCA (kō′kȧ), a shrub native to Peru. It attains a height of eight feet. In the Andes it is cultivated at an altitude ranging between 2,500 and 5,000 feet. The leaves are dried and mixed with powdered chalk and are chewed as a stimulant much like tobacco. Coca leaves contain an alkaloid *cocaine* and a waxy substance called *coca wax*. The habit of using it is as obnoxious among the Peruvians as the use of opium is among the Chinese.

COCAINE (kō′kȧ-ĭn), an alkaloid obtained from the leaves of the coca plant. The leaves of the plant are green, about two inches long, and the alkaloid is extracted by alcohol and a small quantity of sulphuric acid. It is a colorless, transparent drug, has a bitter taste, and is odorless. The drug is soluble in ether, and is used as a local anaesthetic. It is valuable as such in operations on the eye, ear, and other delicate organs of the body. When taken internally, it is a powerful nerve stimulant, and, if used persistently, causes nervousness and later insanity. Cocaine was first made in Peru in 1885, and vast quantities are now exported from that country and Bolivia to the United States and Europe.

COCCULUS INDICUS (kŏk′ku̇-lŭs ĭn′dĭ-kŭs), the fruit of a climbing plant native to the East Indies. It is about the size of a pea, has a dry exterior coat, and somewhat resembles the bayberry, but is very poisonous. The bitter principle, known as *picrotoxin,* when taken internally in poisonous doses, acts much like strychnine. It is used to destroy lice and the ringworm and for various purposes in medicine. The seeds are sometimes called *fishberries* from the circumstance that they stupefy fish. They are used to some extent by fishermen, who cast them into the water for the purpose of stupefying the fish so they may be easily caught by hand or in a small net.

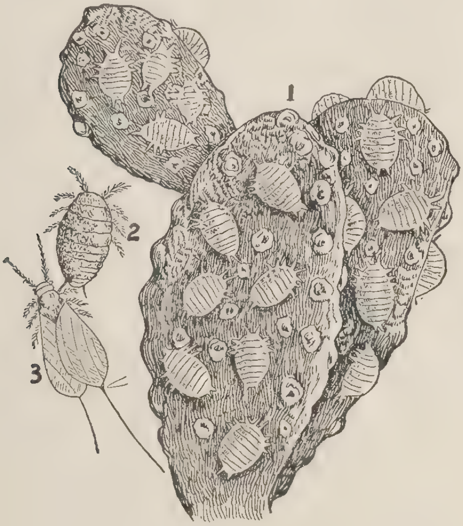
COCCUS (kŏk′kŭs), a group of insects which include the bark lice, mealy bugs, scalelike insects, and a number of others. The species are very numerous and differ greatly in appearance, but in most of them the female is wingless and the male has a single pair of wings. They attach themselves to plants by inserting their beak, with which they suck the sap, hence are very injurious to hothouse and garden plants. These insects include those from which cochineal, gum lac, and kermes are obtained.

COCHABAMBA (kō-chȧ-bäm′bȧ), a city of Bolivia, capital of the department of Cochabamba, on the Rio de la Rocha. It is located in a fertile valley, has wide and regular streets, and has considerable trade in produce and merchandise. The manufactures include soap, leather, earthenware, and cotton and woolen goods. Among the chief buildings are a theater, two hospitals, several churches, and the government building. The city was founded in 1563. Population, 1922, 30,175.

COCHIN (kȯ-chēn′), a city of British India, a seaport in the district of Malabar, eighty miles southeast of Calicut. It is important for its large foreign and interior trade, has transportation facilities by railroads and steamship lines, and is the seat of extensive shipyards. Many classes of Asiatics and Europeans make up the inhabitants, who carry on a large trade in oil, cocoa, teak wood, and merchandise. Cochin was visited by the Portuguese under Vasco da Gama in 1503, but the Dutch captured it in 1662, when it was made a great emporium of trade. It has been a British possession since 1796. Population, 1922, 18,250.

COCHIN CHINA (kō′chĭn chī′nȧ), the name applied to the French colony in the southern extremity of the eastern portion of the Indo-Chinese peninsula. The designation is loosely attached to the former empire of Anam, which included three distinct regions: Lower Cochin China, Upper Cochin China, and Tonquin. Lower Cochin China is now the French colony of Cochin China. Upper Cochin China is the French protectorate known as Anam, and the remainder lying to the north is called Tonquin. These and Cambodia constitute the present French possessions in Southeastern Asia.

Cochin China occupies the southeastern extremity of the Indo-Chinese peninsula, and includes a small part of the territory embraced within the former empire of Anam. The area is 23,182 square miles. It is bounded on the northeast by the region included in Anam, northwest by Cambodia, south and east by the China Sea, and west by the Gulf of Siam. It now has a number of railroads and is extensively connected by telephone and telegraph lines, and many of its cities are in a growing condition. The chief products consist of rice, cotton, hides, domestic animals, fish, pepper, and tropical fruits. The French government has established free schools and erected a number of public buildings. There is a French army of about 2,000 soldiers, besides about that number of Anamese troops. The Mekong River furnishes an avenue for interior navigation. A number of the seaport cities have a large foreign and interior commerce.



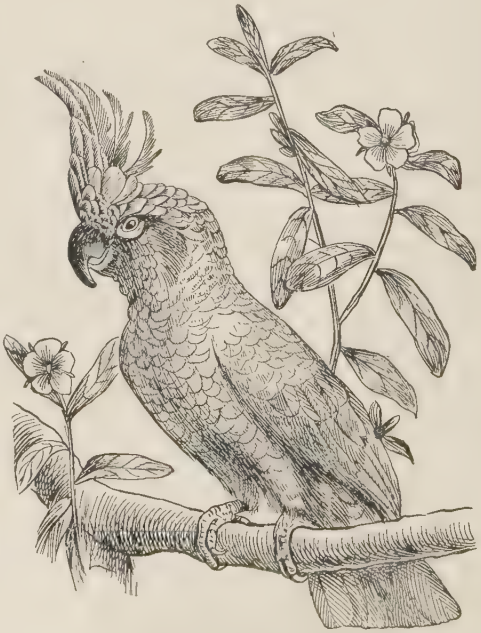
1, Cochineal insects on cactus 2, Female; 3, Male.

The region was conquered with Anam by China in 214 B. C., and became independent as a part of Anam in 929 A. D., and in the early part of the 15th century was successful in a war against China. In 1517 it was made a part of the Portuguese possessions. Later it was conquered by the Dutch, and in 1789 became tributary to France. The population is 2,976,521, of which 5,000 are French settlers and traders.

COCHINEAL (kŏch′ĭ-nēl), an insect found native on the cactus plants of Mexico and Central America. It has been naturalized in the warmer portions of Eurasia and Africa. The value of the insect consists of its importance in preparing *cochineal,* an article used in producing scarlet colors and in making carmine and lake. However, the commercial product is obtained only from the females, which outnumber the males in the proportion of about 150 to one male. Each of the females lays about 1,000 eggs, and the crops are picked in the period from December until May. The insects are brushed off the plants and killed by the heat of the sun or in an oven. A single pound of cochineal contains about 70,000 of the insects. The value of these insects was first discovered by the Spanish in 1518.

COCHRANE (kŏk′ran), **Thomas,** tenth Earl of Dundonald, born at Annsfield, Scotland, Dec. 14, 1775; died Oct. 31, 1860. He joined the navy at the age of eighteen, was made a lieutenant in 1796, and rendered efficient service against the French in the Mediterranean Sea. In 1806 he was elected a member of the House of Commons, where he made many enemies by exposing the abuses practiced in the navy. The government of Chile invited him to organize and command its navy, and he went to Valparaiso in 1818, where he rendered much aid in obtaining independence from Spain. In 1820 he captured Valdivia, Chile, and subsequently aided in reducing Lima and Callao. He became first admiral of the Brazilian navy in 1823 and the same year compelled the Portuguese to evacuate Bahia, and in 1828 took charge of the navy of Greece. In 1831 he succeeded his father as peer of England, where he spent the remainder of his life. He published "Narrative of Services in the Liberation of Chile, Peru, and Brazil."

COCKATOO (kŏk-ȧ-tōō′), the name applied to a genus of birds of the parrot family. They have a large head crowned by a tuft of long and pointed feathers. The bill is strong and curved from the base, and the plumage is bright, commonly white in color, but sometimes mixed with red, blue, and yellow. The name was given to these birds on account of their peculiar utterance, screamed out harshly. They are able to acquire a few words, but are not possessed of


AUSTRALIAN COCKATOO.

much imitative power. The chief food consists of fruits, seeds, and small insects. Australia and the Eastern Archipelago are well populated with these birds, where they live in large tribes and may be easily domesticated.

COCKBURN (kō′bûrn), **Sir Alexander James Edmund,** jurist, born Dec. 24, 1802; died in London, England, Nov. 20, 1880. He studied at Trinity Hall, Cambridge, was admitted to the bar in 1829, and became Queen's Counsel in 1841. His pleading before committees of Parliament attracted attention, and he was elected as a member of that body from Southampton, in 1847, where he became noted for ardor and eloquence in supporting the foreign policies of Palmerston. He was made Solicitor General in 1850, and after successive promotions became Lord Chief Justice of England in 1859, holding the office until his death. As a barrister he conducted many celebrated cases, including the famous Tichborne Case, and represented Great Britain in arbitrating the Alabama Claims, over which a long controversy had taken place with the United States.

COCKCHAFER (kŏk′chā-fẽr), a class of beetles widely distributed in Europe and North America. The larvae live from two to five years in meadows and pastures, where they burrow in the soil and feed on the roots of the grass. In the adult state they are about an inch long and live only a few days, hence they do little damage to the leaves of trees upon which they feed. This class of insects is known in England as *May bugs* and in America as *June bugs,* since they come out of the ground in May or June. In some seasons they occur in great numbers, though usually they are not regarded as a pest, except in some meadows and strawberry patches.

COCKLE (kŏk′k'l), a common name for several species of bivalve mollusks. They are found in the sandy shores of the sea, have a heart-shaped form, and are much used as food. The cockle is nearly equivalvular, with a hinge fastening the two parts.

COCKLEBUR (kŏk′k'l-bûr), or **Clotbur,** the name of several species of troublesome weeds found in most of the continents, especially in the Temperate zones. One species, the *xanthium canadense,* is native to North America, and two other species were introduced from Europe. The species known as *xanthium strunarium* is particularly troublesome in the fields of Southern Canada and most sections of the United States. The plant is branching, has coarse heart-shaped leaves, and grows to a height of from one to four feet. It is an annual plant and produces burs about an inch long covered with stout prickles. The burs have two cells and retain their vitality a number of years, hence it is difficult to rid fields of them, except by seeding the ground in timothy and clover, or some other perennial grasses, thus preventing the plants from seeding. Cockleburs are injurious to the wool industry as the burs fasten themselves in the wool, hence stringent laws are in force in the south of Africa and other continents to eradicate the obnoxious weed.

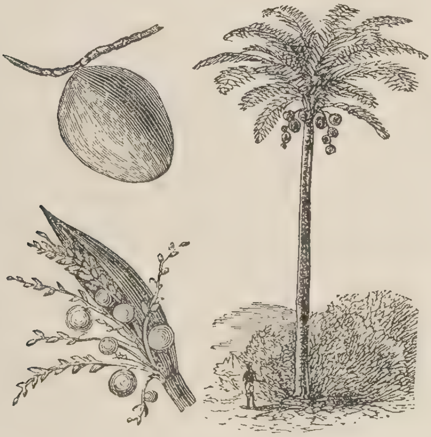
COCK OF THE ROCK, a bird found in the northern part of South America. It is about the size of a large pigeon, has orange colored plumage, and the head is crowned by a beautiful flattened crest. These birds are so named from their habit of building nests on rocks near rocky watercourses and on bushy hillsides. The males court the females by assembling in cleared places, where they display their plumage until chosen as a mate by some observant female. The skins are valued for millinery purposes and command a high price in the market.

COCKRAN (kŏk′ran), **William Bourke,** American public man, born in Ireland, Feb. 28, 1854. He emigrated to the United States in 1871, where he secured an education and taught school in Westchester County, New York, for five years. In 1876 he was admitted to the bar and became distinguished as an able advocate. He served as a commissioner to revive the judiciary clause of the constitution of New York. As a leader in Tammany Hall and in Democratic politics he attained much success. He was elected to Congress in 1888 and again in 1892. As a public speaker and debater in Congress and on the lecture platform few public men have given evidence of greater strength of voice and skill in argument. In 1896 he supported President McKinley on account of being opposed to the principal of bimetallism. In anti-trust and colonial discussions following the war with Spain he supported the Democratic party, and was an advocate of the election of William J. Bryan in 1900. He was again elected to Congress in 1904, 1906, and 1908. He died Mar. 1, 1923.

COCKROACH (kŏk′rōch), a genus of insects belonging to the order having straight wings. The Oriental or proper cockroach is thought to have come originally from India, but is now found widely distributed. In the male the wings are half the length of the body when mature, while in the female they are but rudimentary. The body is oval, elongated, and has a well-marked smoothness on its upper surface. The eggs remain in the abdomen of the female for six or eight days, when they are attached to some solid body by means of a gummy fluid secreted by glands. Several species of cockroaches in America are widely distributed, some of which attain a length of from two to three inches. The *Croton bug,* so named from the Croton Aqueduct of New York, has followed man to all parts of the globe and is confined chiefly to the larger cities. Cockroaches are nocturnal in habit, have a ravenous appetite, and leave an unpleasant scent on food that they are unable to devour.

COCOA (kō′kô), or Cocoa Palm, the best known and most prized of the palm trees. It is found on the coasts of islands and continents having a warm climate, and is common to the

West Indies, South America, India, and the East Indies. The tree thrives best near the seacoast, but rare ones are found at an elevation of 2,500 feet above the sea. It attains a height of from sixty to ninety feet. The trunk is slender and is marked by scars when the leaves have fallen off, these constituting transverse rings. In most cocoa trees the rings serve as a means of ascending the trees to secure the fruit, and are used for that purpose by the natives. The leaves grow in the form of a bunch or tuft at the top, are from twelve to fifteen in number, and are of gigantic size. About eighty to one hundred nuts are produced on an average tree. They are used for various purposes in the production of food and other articles valuable in commerce. The terminal bud is considered a delicate food. The leaves are used for baskets, buckets, and thatched dwellings. In a number of localities fences are made of them, and they also serve as a substitute for writing paper. The midribs of the leaves are used for oars, while their ashes yield potash, and a portion is used in cradles and in the manufacture of clothes. The stem of the leaves serves in making drums and in constructing huts and furniture. The roots yield medicines and serve the natives as a chewing substance. Chocolate (q. v.) is not the product of this tree, but of the cacao, or cocao tree, which has undivided leaves and clustered flowers and is native to tropical America.



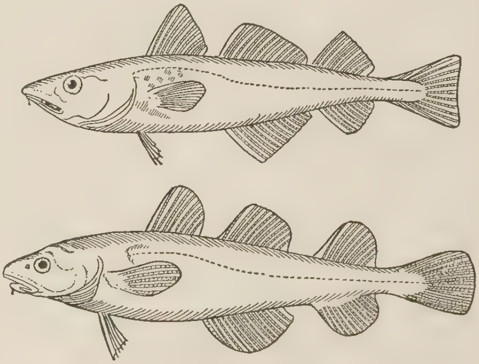
COCOA. TREE AND FRUIT.

COCOANUT, the fruit of the cocoa palm growing in tropical countries. It is from three to eight inches in length, covered with a fibrous husk, and contains a fleshy kernel. It is an agreeable article of food and is used for various purposes in manufacture. The interior of the nut is of a whitish color and contains a milkish white fluid. In some regions large quantities are dried before the oil is expressed, when the product of the kernel is known as *copra.* The fibrous covering is used in the manufacture of yarn, matting, and cordage, and is known as *coir.* Cups and vessels are made from the hard shell of the nuts, which, when polished, serve a useful purpose. The wood of the tree is used in the construction of houses and for other building purposes. The tree yields a sweetish liquid called *toddy,* which, when distilled, forms a spirit called *arrack.* A sugar is obtained from the juice known as *jaggery.* The nut produces the *cocoa butter.* This butter is used as a substitute for creamery butter, and is sometimes mixed with butter and colored with a butter coloring. It is usually yellowish white and has a weak chocolate odor and an agreeable taste. It does not become rancid when kept.

COCOON (kō-ko͞on′), the outer covering of silky fibers or hair with which the pupae of many insects are protected. This silky fiber is formed in some insects, as in caterpillars, some varieties of spiders, and silkworms. The cocoon gathered from silkworms is the article from which silk is manufactured.

COD, the name of a cape and bay in the eastern part of Massachusetts. They were so named from the large number of codfish that abound in and near the bay. See **Cape Cod.**

COD, a valuable food fish abundant in the waters off Newfoundland and throughout the temperate seas of Eurasia and America. There are several well-defined species, all belonging to the soft-finned fishes. They feed mostly in water about twenty-five to sixty fathoms deep, and weigh as much as a hundred pounds. They spawn from January to May, at which season great numbers crowd together. In two years the young fish become marketable and reach maturity at the end of three years, when they weigh about sixty pounds. The best months for cod fishing are October, November, and December.



COMMON COD.
TOM COD.

The codfish is a good biter at almost any kind of bait and ordinarily feeds on worms, mollusks, and small fishes. It is a valuable fish for food, while isinglass is made of its bladder and cod-liver oil from its liver. Cod-liver oil was recommended as early as 1833 for diseases of the lungs and in cases of chronic rheumatism. Codfish are caught mostly with hooks and lines, one man being able to catch from 300 to 500 in a day. However, most of the fishing is done by the aid of schooners, from which the fishermen put out long lines called *trawls,* and to these are attached shorter baited lines. The fish are taken off the lines from time to time and are immediately dressed and salted. Some of the best cod fisheries are adjacent to Newfoundland and off the coast of Norway.

CODDINGTON (kŏd′dĭng-tŭn), **William,** founder of the colony of Rhode Island, born in Boston, England, in 1601; died Nov. 1, 1678. He arrived in the Plymouth Colony in 1630 and was a trader at Boston several years. He defended the views of Ann Hutchinson and in 1638 removed to the island of Aquetuck, now Rhode Island, where he founded a colony that was to be "judged and guided by the laws of Christ." In 1640 he was elected governor and held office until 1647, when Rhode Island was incorporated in the charter with the Providence Plantations. He went to England and received a commission to govern Aquetnck Island for life, but the colonists considered that this deprived them of their rights and he resigned. In 1666 he adopted the tenets of the Quakers, and was governor of Rhode Island from 1674 until his death.

CODE NAPOLÉON, the laws of France promulgated between 1804 and 1810, which are contained in the so-called Five Codes. The laws of France were greatly diversified at the time of the Revolution and a general or national code was demanded by the people. Napoleon promulgated the first code, generally known as the "Civil Code of France," to which additions were made subsequently, and the title was changed to Code Napoléon in 1807. Few new laws were introduced, but those in existence were codified and edited so as to present simple and clear statements. It may be said that the Code Napoléon harmonized the customary laws of the German provinces in the north with the laws of southern France. The rapid rise of French power caused these laws to be adopted in many countries of Europe before 1814, and many of them are still in force in Belgium, Italy, and Holland. The code of Louisiana and those of a number of republics in Central and South America are based upon the Code Napoléon.

CODEX (kō′dĕks), the name applied to the wooden tablets coated with wax and used for writing by the ancients. Subsequently the name was applied to all large manuscripts, as the works of the poets and historians, and under the emperors of Rome it designated collections of civil and ecclesiastical laws. The oldest and most celebrated collections of civil laws are those known as the "Codex Theodosianus" and "Codex Justinianus." In more recent times the term came to be applied more generally to the ecclesiastical writings, such as the "Codex Alexandrinus," which is written on parchment and contain the entire Greek Bible, except the books of Matthew, John, and II. Corinthians. In this work the Old Testament is in the Septuagint version. The "Codex Rescriptus" is an ancient parchment on which the original writing has been defaced and upon which a different composition has been copied. A parchment of this kind is now called a palimpsest. See **Palimpsest.**

COD-LIVER OIL, a fixed oil obtained from the livers of the cod, ling, torsk, and other related species of fish. The adipose tissue of these fish is confined almost entirely to the liver, from which it is obtained by heat or by pressure in a cold state. Formerly the fishermen put the livers in barrels, where they were kept from one to four months, during which time they underwent putrefaction and the oil would rise to the top and be drawn off into vessels. The oil is now obtained in a much cleaner way by simply heating the fresh livers for two or three hours, after which the oil is pressed out. Cod-liver oil has a pale yellow color and is a better food than any other oil. It is easily digested and is valuable as a food in consumption and other wasting diseases. The taste is very disagreeable, hence it is administered in various ways, frequently in capsules. A preparation known as *emulsion* has a milky appearance and is made by mixing a number of remedies with cod-liver oil, usually such as chloroform elixir of sacchrin, malt extract, alcohol, oil of bitter almonds, sodium bicarbonate, etc. A tablespoonful taken three times a day is a common dose of the pure oil.

CODRUS (kō′drŭs), in Greek history, the son of Melanthus and the last King of Athens. It is supposed that he lived about 1068 B. C. The oracle declared that the people of Athens would be victorious if their king should be slain, hence Codrus sacrificed himself by entering the camp of the enemy in disguise and being slain after provoking a violent quarrel with the common soldiers. The Dorians, who had invaded Athens, abstained from hostilities as soon as they learned of the death of Codrus and returned home, and the Athenians, thinking no one worthy to succeed Codrus, abolished the royal dignity and instituted in its stead the office of *archon.* Medon, son of Codrus, was the first archon.

CODY (kō′dȳ), **William Frederick,** better known as Buffalo Bill, American frontiersman, born in Scott County, Iowa, Feb. 26, 1845. He spent the early years of his life among the Indians. In the Civil War he rendered valuable service as a Union scout. When the Union Pacific Railway was in a state of construction, he closed a contract with the Goddard Brothers to furnish fresh buffalo meat for a certain period, on account of which he was named "Buffalo Bill." Under this contract he delivered 4,280 buffaloes. Later he became engaged in several raids against the Indians and settled at North Platte, Neb., where he established a large cattle ranch and engaged in the raising of buffaloes. Later he collected a band of Indians, rough riders, cowboys, unbroken bronchoes, and a herd of buffaloes and organized his famous "Wild West" show. After visiting the principal cities of America, he made a tour through Europe and returned to the World's Columbian Exposition in 1893, where he met with much success. His exhibitons in Europe were visited by many of the crowned heads of various nations. His biography was written by one of his associates, John M. Burke, known as "Arizona John," under the title of "Buffalo Bill, from Prairie to Palace." He is one of the best known showmen of America and as such was among the most successful. He died Jan. 10, 1917.

COEDUCATION (kō-ĕd-ū-kā'shŭn), the association of males and females for instruction in the same institution, school, or class, each receiving the same training and culture. This system prevails generally in the elementary public schools of the United States, being the most convenient and economical, except in a few large cities, such as New York and Boston. This practice appears to receive, not only the tolerant assent of parents as a necessity, but unqualified approval is given in most cases on the ground that it is the best to be adopted. However, nearly half the private elementary schools have separate instruction and courses of study for boys and girls, and in 1918 about eight per cent. of the pupils receiving elementary instruction attended such schools.

Those who oppose coeducation give a number of reasons in support of their views. Among these is the chief one that mixed schools do not provide instruction and discipline quite as well fitted to the peculiarities of the sexes. They think that the manners of the girls are influenced unfavorably by the coarser conduct of the boys, and that on the other hand the boys receive little or no benefit from the presence of the girls. Some think that there is a liability of influencing unfavorably the moral character of each, which is guarded against by preventing the constant presence and intermixing of the sexes in the classes and on the playground. Those who favor coeducation, on the other hand, think that the presence of the girls tends to improve discipline and stimulate self-respect and politeness. It is held by this class that both instruction and one-sided training is prevented, and that interest will center in such studies as mathematics as well as literature and poetry when both sexes meet in recitation work. So far as moral tendencies are concerned they think daily association of the sexes is healthful and provides a general uplift and induces a tendency toward the practice of the good rather than toward the more base.

It must be observed that coeducation is gaining ground steadily in America as well as in the more progressive countries of Europe. This is true particularly of England and Germany, though the gymnasiums and *realschulen* of Germany are with few exceptions for boys exclusively. The last few years a struggle of women for admission to the universities of Germany has been going on, and resistance has not only given way to a considerable extent, but many advocate coeducation who formerly opposed it, being satisfied by a practical test that coeducation has many advantages. In England and Scotland women are admitted to nearly all the universities, though exception is made in some to their admission where law and medicine are studied, while in Australia women are not only admitted as students, but are given places as lecturers and professors, and wider privileges have been extended in Austria and Russia. All the universities of Switzerland are open to women on the same terms as to men. In 1925 there were 14,012 coeducational high schools in the United States out of a total of 14,056, while the private secondary schools, which numbered 1,193, included 210 for boys and 490 for girls, while 493 were coeducational. Practically the same proportion of coeducational schools are maintained in Canada.

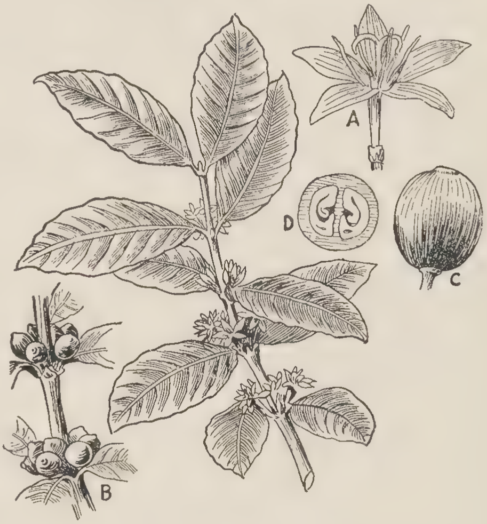
In speaking of separate schools for the sexes Jean Richter said: "To insure modesty, I would advise the education of the sexes together; for two boys will preserve twelve girls, or two girls twelve boys, innocent, amidst winks, jokes, and improprieties, merely by that instinctive sense which is the forerunner of natural modesty. But I will guarantee nothing in a school where girls are alone together and still less where boys are." Dr. Clark, in his work entitled "Sex and Education," says: "Boys must study in a boy's way, and girls in a girl's way. Appropriate education of the two sexes carried as far as possible is a consummation most devoutly to be desired; identical education of the two sexes is a crime before God and humanity, that physiology protests against, and that experience weeps over." President Fairchild, of Oberlin, said: "During my experience as professor—twenty-seven years in all—I have never observed any difference in the sexes as to performance in recitation." James Burrill Angell, president of the university of Michigan, said: "We have not had the slightest embarrassment from the reception of women. They have done their work admirably, and, apparently, with no peril to their health." In speaking on this subject, Caroline Wells no doubt expressed the correct view in saying: "Education is to be adapted neither to boys nor to girls, but to individuals. The mother, or the teacher, has learned little who attempts to train any two children alike, whether as regards to the books they are to study, the time it is to take, the attitudes they are to assume, or the amusements they are to be allowed."

COELENTERATA (sē-lĕn-tē-rā'tȧ), a branch of the animal kingdom, the next to the lowest of the types of Metazoa, which include the polyps and jellyfishes. The body cavity and circulatory system are not distinctly separate, but the food enters through the mouth into a system of chambers or tubes, which take the place of the body cavity and of the digestive system. Most of the coelenterates live in the sea, only a few inhabiting fresh water. The jellyfish is not regarded as a true member of this class of animal life and is a free-swimming organism, while the corals, hydroids, and sea anemones are fastened to some object during their natural life. The sponges, though classed with these animals, have no tentacles.

COEUR D'ALENE (kẽr-dȧ-lĕn'), an important city in Idaho, county seat of Kootenai County, near the border of Canada, in the northwestern part of the state. It is on the Northern Pacific, the Chicago, Milwaukee and St. Paul, and other railroads. An electric railway connects it with Spokane. It is visited by many tourists. Population, 1920, 6,475.

COFFEE (kŏf'fē), a genus of shrubs cultivated in warm climates, native to Abyssinia and Arabia. The coffee plant is now grown in the West Indies, Bermuda, and the tropical climates of America and other continents. About fifty species are grown for commercial purposes. Those producing the coffee seeds of the market attain a height of from fifteen to twenty feet in the native state, but they are treated usually so as not to exceed more than ten feet. In this way the production is increased largely, since the seeds grow mainly on the smaller and newer twigs. The seeds or beans are destitute of flavor in a raw state, but in roasting a peculiar brown oil, known as *caffeine,* is developed, and this gives to coffee its beautiful aroma. Caffeine is the most valuable constituent of coffee, and is identified closely with the alkaloid *theine* found in tea. It is found in roasted coffee in a proportion of about one per cent. Coffee is ground and made into a drink which constitutes one of the most wholesome beverages known. It assists digestion, retards waste, and exhilarates the spirits. It is adulterated with chickory in a ground form, and is sometimes mixed with figs, malt, and raisins. The best way to avoid adulteration is to use only the coffee beans and grind them as the coffee is needed for household use.

Among the different kinds of coffee are *Mocha,* secured from the region of the Red Sea; *Java coffee, Jamaica coffee,* and the *Rio coffee* of South America. Coffee was entirely unknown to the ancient Greeks and Romans. The Dutch first brought the coffee plant to other lands and cultivated it. Seeds were brought to Java about 1690, and to Brazil and South American countries in 1774. The production is continually increasing. The world's annual output is about 1,550,000 tons, more than two-thirds of which is grown in Brazil. Other countries that are extensive growers of coffee include Mexico, India, the Dutch East Indies, Arabia, and Central America. The United States and Canada secure their supply principally from Brazil. According to recent authority, the consumption of coffee in Holland is twenty-three pounds per year for each person; Belgium, eleven; United States, ten; Germany, six; France, four; Great Britain, one.



COFFEE PLANT.
A, Flower; *B,* Fruit Stock; *C,* Fruit; *D,* Section of Fruit.

COFFEYVILLE, a city of Kansas, in Montgomery County, 170 miles southwest of Kansas City, on the Santa Fé, the Missouri Pacific, and other railroads. It is nicely located on the Verdigris River and is surrounded by a fertile country which produces fruits and cereals. Coal, petroleum, natural gas, and potter's clay are obtained in the vicinity. The manufactures include flour, pottery, brick, machinery, and cigars. It has a number of fine schools and churches, gas and electric lighting plants, waterworks, and a public library. The first settlement in its vicinity was made in 1869 and it was incorporated two years later Population, 1900, 4,953; in 1920, 13,452; in 1925, 16,229.

COFFIN (kŏf'fĭn), a box or chest in which a corpse is inclosed for burial. Coffins were used by the ancients mostly for the bodies of distinguished persons. They are mentioned in the Scriptures in relation to the embalmed body of Joseph. The Egyptians used wooden coffins and sometimes placed the bodies in caskets of stone and baked clay. The Romans and Greeks employed cedar wood in constructing coffins, and in later times the former practiced cremation, placing the ashes in urns. However, the Greeks placed many corpses in coffins made of a limestone known as *sarcophagus,* which absorbed the tissues of the body in a few weeks, and the name soon came to be applied to the coffin itself. The Christians introduced the extensive custom of burying in coffins. Those used in modern times are made of wood or metal.

COFFIN, Charles Carleton, journalist and author, born at Boscawen, N. H., July 26, 1823; died Mar. 2, 1896. He began life on a farm and attended the public schools. Later he engaged in engineering, and subsequently took up journalism in Boston. His books were read extensively and appeared under a number of widely different titles. They include "Following the Flag," "Our New Way Around the World," "The Seat of Empire," "Old Times in the Colonies," "Building the Nation," "The Drum-Beat of the Nation," "Days and Nights on the Battlefield," and "Life of Garfield."

COGNAC (kōn-yäk′), a town of France, in the department of Charente, twenty-five miles west of Angoulême. It is situated on the Charente River, has an old castle in which Francis I. was born, and is famous for the manufacture of Cognac brandy. The surrounding country is devoted largely to the cultivation of the vine. Among its improvements are electric lights, a public library, and extensive transportation facilities by railways. Population, 1916, 19,590.

COHAN, George M., playwright, born at Providence, R. I., July 4, 1878. He began to play at the age of nine years in "Daniel Boone" and "Peck's Bad Boy," and subsequently acquired a wide reputation as a comedian. He published "The Little Millionaire," "Get-Rich-Quick-Wallingford," "Seven Keys to Baldpate" and "Forty-five Minutes from Broadway."

COHESION (kō-hē′zhŭn), the force by which molecules of the same kind or of the same body are held together. It is strong in solids, weak in liquids, and absent in gases. It varies with the nature of the bodies and with the arrangement of the molecules in the same body. Thus, the tempering of steel alters the molecular arrangement in that substance, with the effect also of altering its cohesion. The hardness, ductility, and tenacity arise from modification in the cohesion of substances. See **Adhesion.**

COHOES (kō-hōz′), a manufacturing city of New York, in Albany County, at the confluence of the Mohawk and Hudson rivers. It is on the Erie and Champlain canals and on the New York Central and the Delaware and Hudson railroads. The chief buildings include the public library, the high school, the Episcopal Saint John's church, and the Roman Catholic Saint Bernard's church. It has iron foundries, machine shops, rolling mills, knitting mills, pin and needle factories, cotton mills, and furniture factories. Cohoes ranks as one of the leading manufacturing cities on the Hudson and has a large trade in produce and merchandise. Gas and electric lighting, pavements, waterworks, public parks, and rapid transit are among the improvements. It was settled by the Dutch about 1630 and was chartered as a city in 1870. Population, 1905, 24,183; in 1925, 23,345.

COINAGE (koin′āj), the process of making money of metal by stamping certain characters upon it, giving it a definite legal current value. Coinage was practiced early in history, the first mention of brass money being made by Homer in 1184 B. C. The Lydians coined money of gold and silver. The most ancient coins now extant were made in the 5th century B. C. In Rome metal money was made of brass previous to 269 B. C., at which time Fabius Pictor began to coin silver, and gold was coined in 206 B. C. The early coin money of Rome contained the heads of deities, or those statesmen and warriors who had been granted divine honors. Julius Caesar was the first living Roman whose portrait was placed on coins, and the example was soon followed by various rulers in other nations. Much of the coin money of ancient times was made of iron and brass, but gold and silver were used more or less by the richer nations.

In Great Britain the coinage is regulated by Parliament, although the prerogative of coining is vested in the crown. The coinage of Canada is regulated by the Dominion Parliament and is directly in charge of the deputy master and the superintendent of the royal mint. Silver is used for small change in Canada, and the coins are of the same denominations and have the same names as those of the United States. Although gold is coined extensively, it is rarely seen in circulation, practically the whole stock in the country being held by the government against the issue of legal tender notes and as reserves in the banks.

The first coinage laws of the United States went into effect in 1792. They provided a double standard, that of gold and silver, the latter of equal legal value, coined fifteen times greater in weight than the former. Since then various changes have been made, which are fully explained in other articles. The metric system is used to a certain extent in determining the weight of silver coins, and the monetary system is based on the most convenient scale of increase and decrease. Gold coins at the present time consist of double eagles, eagles, half eagles, three dollars, quarter eagle, and the dollar. The coins of three dollars and one dollar are quite rare. The silver coins consist of dollar, half-dollar, quarter-dollar, and dime, or ten cent, pieces, while the minor coins of nickel and bronze include five-cent, three-cent, and one-cent pieces. See **Mint.**

COIR (koir), the fiber of the cocoanut and other palms, used in the manufacture of ropes, mats, bags, cables, etc. The fiber is obtained from the husk and is divided into two classes, the outer or ordinary fiber and the inner or brush fiber. Mats are made largely of the ordinary fiber, which is the coarser and less durable, while the brush fiber is the finer product and is shipped in great quantities to the manufacturers, who use machinery in making cable yarn and yard matting. The waste or refuse of coir supplies the stuffing for mattresses and other commercial products.

COKE (kōk), an article of fuel obtained by heating coal in ovens, or other devices, where little air is admitted. It is often prepared in heaps, but generally in ovens built for the purpose. The heat is applied until the volatile constituents have been expelled; thus, the coke consists largely of impure forms of carbon and contains earthy matter and often some sulphur. It is brittle, hard, and porous, and floats in water until it becomes saturated, when it sinks. Coke produces an intense heat when burnt, gives off no smoke, and is useful for cooking purposes and in manufactures. It is valuable in separating metals from their ores and for refining and smelting. Coal coke is formed in the manufacture of coal gas, being a residue left after all the gas has been distilled. Coal yields from sixty to seventy per cent. of coke. Large quantities of coke are made in Pennsylvania, West Virginia, Germany, and England.

COKE, Sir Edward, jurist, born at Mileham, England, Feb. 1, 1552; died Sept. 3, 1634. He studied at Trinity College, Cambridge, was called to the bar in 1578, and became recorder of Norwich in 1586. Subsequently he was recorder of London and in 1593 was elected a member of Parliament. He was chosen speaker of the House of Commons, and later as Attorney-General conducted the prosecution of Sir Walter Raleigh in 1603 and the Gunpowder plotters in 1605. He was made Chief Justice of the Common Pleas in 1606, and seven years later became Chief Justice of the King's Bench and afterward Privy Councilor, but was expelled from the latter office and committed to the Tower in 1621 because of his opposition to James I. In 1628 he again entered Parliament and took an active part in framing the Petition of Right, which was presented in the third Parliament of Charles I. His disposition was intolerant and his religious advocacy was fanatical, but he won popularity by his courage in supporting the commons against the crown. Among his writings are "Coke Upon Littleton," "Reading on Fines," and "The Complete Copyholder."

COKE, Thomas, first bishop of the Methodist Episcopal Church in America, born in Brecon, Wales, Sept. 9, 1747; died May 2, 1814. He was educated at the University of Oxford, took orders in the Church of England in 1770, and two years later was converted to the teachings of Wesley. In 1784 he was appointed bishop for America and made nine visits to that continent, preaching and organizing churches in many parts of the United States. He preached the Gospel in many parts of Great Britain and Ireland, founded missions in Gibraltar and the East and West Indies, and died of apoplexy while on the voyage to Ceylon, where he expected to establish a foothold of the church. His writings include "Life of John Wesley" and "History of the West Indies." He edited several religious works and published a commentary on the Scriptures.

COLBERT (kōl-bâr′), **Jean Baptiste,** eminent statesman, born at Rheims, France, Aug. 29, 1619; died Sept. 6, 1683. He served an apprenticeship in a woolen mill, and afterward went to Paris, where he was employed in the government service. He became chief minister to Louis XIV. in 1661. By his careful administration the financial condition of France was improved greatly and the public revenues were more than doubled. His wise management led to the construction of canals and roads, the enlargement of commerce, and various improvements in agriculture and industrial arts. The colonies were improved greatly by a careful application of an amended code of laws made under his direction. Science, architecture, and economic conditions were extended greatly by government appropriations and the judicial administration of the law. The public services of Colbert were not appreciated by the French king, and he died in disappointment. The titled nobility of France made his official career unpleasant in many instances on account of his humble birth. However, he rose much above many of his contemporaries, when measured from the standpoint of integrity and personal worth.

COLBURN (kōl′bûrn), **Warren,** educator, born in Dedham, Mass., March 1, 1793; died Sept. 13, 1833. He graduated at Harvard College in 1820 and opened a private school in Boston. In 1821 he published "First Lessons in Intellectual Arithmetic," which became very popular and was translated into a number of European languages. As a lecturer on commerce, physics, astronomy, and natural history he became well known, and for some time was an examiner in mathematics at Harvard.

COLBY COLLEGE (kōl′bĭ), an educational institution founded at Waterville, Me., by the Baptists in 1813. It was first named Waterville College, but changed to Colby University, in honor of Gardener Colby, a philanthropist, by whose generosity the institution prospered greatly. In 1899 the name was changed to Colby College. The property is worth $421,000, and the endowments aggregate $1,350,000. The library has 66,000 volumes. It has about 650 students.

COLCHESTER (kōl′chĕs-tẽr), a river port of England, in Essexshire, 50 miles northeast of London. It is located on a hill near the south bank of the Colne River, twelve miles from the sea, and has electric and steam railway facilities. The manufactures include boots and shoes, clothing, and machinery. Among the public utilities are waterworks, public baths, a public library, and substantial street paving. It is the seat of the Albert School of Science and Arts. Colchester is an old town and dates prior to the Roman invasion. Many ancient vases, urns, and coins of imperial Rome have been found in the vicinity. Population, 1922, 40,425.

COLCHICUM (kŏl′kĭ-kŭm), a genus of plants allied to the lilies. The meadow saffron is a species of colchicum. About thirty other species have been described. They are stemless and thrive in meadows and pastures. The plants attract little attention in the spring, but the flowers are beautiful and appear from August to October. Most species are acrid and poisonous, but some yield valuable medicine for gout and inflammatory rheumatism.

COLD HARBOR, a locality in Hanover County, Virginia, about ten miles northeast of Richmond. It was the seat of several battles in May and June, 1864, between the Union and Confederate armies. The first battle began on June 1 and continued three days. Gen. Grant commanded the Federal forces and had advanced from Spottsylvania to Chickahominy. Gen. Sheridan occupied Cold Harbor, where he was joined on June 1 by forces from Butler's army. The assault made on the Confederates was partially successful, but resulted in a loss of 2,000 men to the Union army. An attack was made on the right flank of the Confederates on June 3, but little advantage was gained, though 7,000 men were lost. Later the Federal army gained some advantage by the battles at Petersburg. The several battles at Cold Harbor cost the Union army almost 13,000 men, while the Confederates lost not over 2,000.

COLD STORAGE, a system of preserving perishable articles of food, such as eggs, meats, and vegetables. Cold storage plants are very common in the cities having a population of 10,000 or more, and are controlled and operated as private enterprises. They are usually divided into a number of rooms or departments, and in nearly all cases are associated with plants maintained for the manufacture of artificial ice. The articles preserved in cold storage are placed in rooms where the temperature is little above the freezing point, whereby it is possible to preserve perishable articles of food so the market can be supplied with choice varieties in good condition at all times of the year. Cold storage is used in large hotels and restaurants, and in the transportation of butter, fruits, vegetables, and meats. Furs are kept in summer to a considerable extent in cold storage.

COLDWATER, county seat of Branch County, Michigan, on Coldwater River, about forty miles southeast of Kalamazoo. It is located in a fertile agricultural and stock-raising country, on the Pennsylvania Railroad, and is a prosperous trading and manufacturing center. The city is the seat of a State school for indigent children. Among its institutions are a public school building costing $100,000, a fine courthouse, and numerous churches. Electric lights, pavements, and a library are among the facilities. It was settled in 1830 and became an incorporated city in 1862. Population, 1904, 6,225; in 1920, 6,114.

COLE, Thomas, landscape painter, born at Bolton le Moors, England, Feb. 1, 1801; died in Catskill, N. Y., Feb. 11, 1848. He came to America with his parents, who settled at Steubenville, Ohio. After painting in various cities with little success, he located as a landscape painter in Philadelphia in 1823. A number of his pictures were exhibited in the Royal Academy in 1830. He traveled through England, Germany, France, and Italy, but his best landscapes are those made in the Catskill Mountains. Among his celebrated paintings are "View of the White Mountains," "Mount Aetna," and "Voyage of Life." The last mentioned has been reproduced largely in engravings and used for illustrating popular books. It represents four phases of human life—childhood, youth, manhood, and old age.

COLERIDGE (kōl′rĭj), **John Duke, Baron,** jurist, born in Devonshire, England, Dec. 3, 1820; died in London, June 4, 1894. He was the son of John Taylor Coleridge and a nephew of Samuel Taylor Coleridge. He was educated at Oxford and admitted to the bar in 1847. In 1855 he became recorder of Portsmouth, was called to the bar as a queen's counsel in 1861, and represented Exeter in the House of Commons from 1865 to 1873. In the latter year he became Chief Justice of Common Pleas, and, on the death of Sir Alexander Cockburn, was promoted to be the Lord Chief Justice of England. He visited the United States in 1883 on the invitation of the New York Bar Association. He was a gifted, scholarly, and eloquent man, and was keen in wit and thorough in scholarship.

COLERIDGE, Samuel Taylor, poet, born at Ottery Saint Mary, England, Oct. 21, 1772; died July 23, 1834. He was educated at Christ's Hospital, where he was a school-fellow of Charles Lamb, acquired extensive knowledge of Greek before his fifteenth year, and became an expert reasoner in metaphysics. In 1791 he entered Cambridge, where his whole time was given to classics. He became despondent while at college and did not take a degree. His straitened circumstances in money matters caused him to leave college and enlist in a dragoon regiment under an assumed name, but he did not advance materially in military skill. His classic acquirements were discovered by one of the officers, which caused his condition to be known to his friends, who obtained his release from the army. He engaged in lecturing and preaching in 1795, and was married to a friend of Southey the same year. Later he published a journal, which did not prove a financial success.

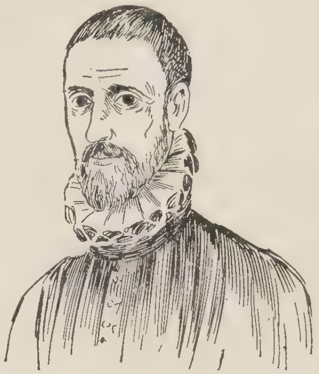
Coleridge went to Germany in 1798 and took a course of study at Göttingen. After his return to England, he located at the Lakes, where he met Southey and Wordsworth. Soon after he translated Schiller's "Wallenstein," brought out lyrical ballads in connection with Southey and Wordsworth, and contributed to the *Morning Post* in literature and politics. His lectures on poetry and the fine arts at London soon followed, but they did not prove a financial success. He became troubled with neuralgia and rheumatism and began the use of opium, by which he was enslaved into the opium habit. His power of criticism placed him in a position where he has had few equals, while many of his poems and productions in philosophy take high rank. As a critic he was among the first to bring out many of the excellent points in the writings of Shakespeare. He was the first representative of German literature and philosophy in England and, next to Carlyle, the most potent. Among his chief writings are "The Rime of the Ancient Mariner," "Christabel," "The Friend," "Juvenile Poems," "Lyrical Ballads," and "Kubla Khan."

COLERIDGE-TAYLOR, Samuel, composer of music, born in London, England, Aug. 15, 1875; died Sept. 1, 1912. He entered the Royal College of Music at the age of fifteen, and later took instruction under C. Villiers Stanford. He devoted himself entirely to composing music after 1896, and wrote for three choir festivals at Leeds and Birmingham. In 1904 he completed a musical setting for Longfellow's "Hiawatha." Among his publications are a number of cantatas and other musical productions, including "The Atonement," "Dream Lovers," and "The Blind Girl of Castel-Cuille."

COLFAX (kōl′faks), **Schuyler**, statesman, born in New York City, March 23, 1823; died in Mankato, Minn., Jan. 13, 1885. He removed with his father's family to Indiana in 1836. Five years later he was deputy county auditor under his stepfather, George W. Matthews, which position he held eight years. He published the *South Bend Free Press* for several years, and in 1845 bought it in connection with A. W. West, but changed its name to *Saint Joseph Valley Register*. In 1848 he was secretary of the Whig convention in Baltimore, which nominated Taylor for President. He was a delegate to the Whig convention in 1852 and was elected to Congress in 1854, of which he was a member until 1869. In 1863 he became speaker of the House and was twice reëlected. The Chicago convention of 1868 nominated him for Vice President of the United States, to which office he was elected with Grant as President. The later years of his life were spent in retirement from politics, but he was active as a lecturer, making several successful tours of the larger cities of the United States.

COLGATE UNIVERSITY, an institution founded at Hamilton, N. Y., in 1820. The name was changed to Madison University in 1846. Later the name was changed to Colgate University in honor of James B. Colgate, a leading dry goods merchant of New York, who made a number of large gifts to the institution. The university is now endowed with about $2,000,000. It has a faculty of forty instructors, 750 students, and a library of about 95,500 volumes.

COLIGNY (kō-lēn-yē′), **Gaspard de**, admiral and general, born at Châtillon-sur-Loing, France. Feb. 16, 1517; slain Aug. 22, 1572. He received early training for the army and served with much distinction under Francis I. in Italy. Henry II. valued his services highly, and he was made infantry colonel and admiral of France in 1552, though he did not command on the sea. He embraced the reformed faith, possessed remarkable capacity as a leader, and was prudent and brave in executing his plans. When Condé was taken prisoner at Dreux, he exhibited sufficient skill to save the Protestant army and France from being overrun by the Spaniards. In statesmanship he was as successful as in war. His sagacity secured freedom of worship for the Huguenots and surpassed the expectancy of the Guises. The latter unjustly accused him of murdering the Duke of Guise at Orleans, which led to the second war with the Huguenots. Catharine de Medici showed bad faith in the political affairs, by which the war was precipitated at an earlier date than expected. Coligny was commander in chief of the forces of Henry of Navarre, later Henry IV. Catherine took advantage of the marriage of Navarre with the sister of Charles IX., the king, after the conclusion of peace, and instigated the massacre of Saint Bartholomew. Coligny, being one of the chief victims, was murdered in his bed, and his body was afterward exposed to inhuman outrages by the mob. His name has gone down in history as that of the most respected and noblest Frenchman of the 16th century.


GASPARD DE COLIGNY.

COLIMA (kō-lē′mȧ), capital of the state of Colima, Mexico. It is located on a fertile plain and is surrounded by hills and mountains. Near it is the volcano Colima, which has an altitude of 12,743 feet. The city has railroad connections, a number of costly edifices, and a large trade in cotton and fruit. Among the chief buildings are the city hall, the state capitol, and the Hospital de San Juan. Colima was founded in 1522. Population, 1916, 22,445.

COLLEGE (kŏl′ĕj), an institution of learning which offers opportunities for study in advanced courses. The instruction is usually in the liberal arts, with a course of study, either fixed, or partly fixed and partly elective, commonly requiring four years for completion. Although there are many institutions that claim rank as colleges, the courses differ very widely. No distinct line of demarkation has yet been fixed between the requirements of a course of study for an academy and a college, and between that of a college and a university. Besides, many of the high schools carry courses covering college branches, in some cases even ranking higher in efficiency than some of the colleges. A typical college course contains provisions for the study of English, German, Latin, Greek, and French languages, mathematics, physics, literature, moral and mental philosophy, civics, engineering, and other allied departments. At the completion of a definite course a degree may be granted, which, in most cases, is recognized by universities where students wish to pursue still more advanced work. Some American colleges have departments for professional training, especially for teaching, while some of the universities have academic or collegiate departments. The list of colleges also includes institutions for special training, as colleges of pedagogy, theology, medicine, music, agriculture, industrial arts, and others. It is thought that colleges had their origin in connection with the University of Paris, in the beginning of the 15th century.

Colleges have been established in many cities of the United States, some as private enterprises and others by State or Federal aid. In the leading towns and cities, from Maine to California and from Canada to the Gulf, there are one or more institutions doing college work. These institutions are usually open alike to both sexes, though there are some exceptions. Many have taken pride in building up extensive libraries, collecting museums, and attaching gymnasiums for the physical development of both sexes. The collegiate institutes of Canada occupy a place between the high school and the university, and pupils attending these schools are prepared for matriculation in the universities. Ontario had 51 collegiate institutes in 1925, and a proportional number is maintained in the other provinces. The name *college,* in Canada, as in England, refers more specially to the body of institutions that constitute a university. Several hundred college papers, including weeklies, monthlies, and quarterlies, fill a valuable field in cultivating an educational sentiment and in furthering knowledge, both among the students and general readers. College societies are maintained in all institutions of this character, having for their object the study of literature and other useful lines. In the larger colleges a number of these societies are supported, usually with courses of study and outlines for research fitted for the different classes of pupils, based upon age and educational attainments.

Many colleges have followed the plan now maintained by most universities in that they provide college extension work. By means of this department it has become possible for the instructors and officers to come in contact with people in adjacent cities and states, and to carry the benefits of higher study to localities remote from educational centers. Thus, a taste for higher education has been awakened in younger students, while older classes and professional and business men have remained in touch with wholesome reviews of branches, thereby enlarging and extending culture and learning. It is quite unnecessary to name the different colleges of the United States in this article. A number of leading institutions have been mentioned in special articles. It may be in place, however, to say that American colleges are so widely distributed and carry such a diversity of courses that it is possible for any person of thrift and brains to attain to educational power and usefulness. These colleges are open alike to poor and rich, while the expense of attendance has been reduced to a minimum. The annual expense of college attendance in many good institutions does not exceed $350, though some students can barely bridge over a year's work with less than $3,000. This, of course, depends upon the habits of economy, the society surrounding college life, and the institution at which an education is sought.

COLLEGE POINT, a locality in Greater New York City, in Queens County, on the south shore of Long Island Sound, about ten miles east of Central Park. It has a number of factories, which are devoted chiefly to the production of India-rubber goods. The streets are well improved and many of the edifices are costly structures. It is the residence of many New York business men.

COLLIE (kŏl'lȳ), or **Sheep Dog,** the name of several kinds of dogs employed extensively in controlling flocks of sheep or cattle. It is a hardy animal with long hair, stands about 25 inches high at the shoulders, and is noted for its intelligence. The muzzle is tapering and the appearance is somewhat foxlike, and the ears are carried flat on the side of the head. Dogs of this class can be easily trained to take a flock of sheep to pasture and drive them home safely at the appointed time. Sheep become accustomed to their dog and regard it as a friend. It is peculiar in its remembrance of places and for protecting flocks from wolves. The collie is a favorite sheep dog in Scotland and the Scotch breed is a representative of this class. Other breeds include the *Welsh,* the *Schipperke,* and the *Pomeranian.* The last mentioned is known as the *Spitz dog* and is favored as a house pet, being somewhat smaller than the Scotch collie.

COLLIER (kŏl'yẽr), **John Payne,** Shakespearean critic, born in London, England, June 11, 1789; died at Maidenhead, Sept. 17, 1883. He became a reporter at the Parliament for the London *Times* while still a boy, and later for the *Morning Chronicle.* His literary career commenced in 1820 with the publication of the "Poetical Decameron." Among his most important works published later are "Notes and Emendations on the Plays of Shakespeare," "The Rarest Book in the English Language," "History of English Dramatic Poetry to the

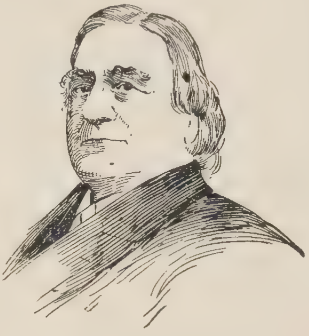
Time of Shakespeare," and "An Old Man's Diary Forty Years Ago."

COLLINGWOOD (kŏl'lĭng-wŏŏd), a port town of Ontario, in Simcoe County, 94 miles northwest of Toronto, on the Northern Railway. It is nicely situated on Georgian Bay, Lake Ontario, and has important steamboat transportation facilities. The manufactures include flour, leather, spirituous liquors, and machinery. It has a large trade in lumber, manufactures, and merchandise. The public facilities include electric lights, several fine schools, and waterworks. Population, 1901, 5,755; in 1921, 7,390.

COLLINS (kŏl'lĭnz), **William**, poet, born at Chichester, England, Dec. 25, 1721; died June 12, 1759. He wrote "Oriental Eclogues," the most celebrated of his poems, while yet a school boy. His education was obtained at Oxford, and he sought to make his living as an author in London, but was financially unsuccessful, owing to poor health and irregular habits. He died unnoticed and unappreciated, though some of his productions are excellent. Among his most popular writings are "Dirge in Cymbeline," "Death of the Poet Thomson," "To Evening," and the poem beginning "How Sleep the Brave."

COLLINS, William Wilkie, novelist, born in London, England, Jan. 8, 1824; died Sept. 23, 1889. He studied at Highbury and later in Italy. Subsequently he returned to London and entered Lincoln's Inn as a student at law. His taste for literary work led him to write the biography of his father, this being his earliest production. He formed the acquaintance of Charles Dickens in 1850 and owes much to him for encouragement and assistance. He visited the United States in 1873-74, where he was shown distinguished honors. His novels are well known in Europe and America, and are popular on account of their fascinating style and beauty of the plots laid for their foundation. Among his most important works are "Household Words," "All the Year Round," "The Fall of Rome," "Hide and Seek," "The Woman in White," "The Dead Secret," "The Law and the Lady," "Evil Genius," "Alice Warlock," "The Moonstone," and "New Magdalen."

COLLODION (kŏl-lō'dĭ-ŏn), a solution prepared by mixing pyroxylin with alcohol and ether, or by treating the pyroxylin in ether and afterward adding alcohol until it is completely dissolved. The process recommended is to treat eight parts of pyroxylin by weight in 125 parts of rectified ether and then add eight parts of rectified alcohol. The product is very volatile, and on evaporating leaves a film which adheres to the surface of bodies, thus making it a convenient application to cuts and wounds in the place of sticking plaster. It is applied by brushing it alone over the edges of the incision, or by spreading it upon strips of ribbon. Collodion is used extensively in photography for preparing sensitive films, which are made by spreading a mixture of collodion and substances sensitive to light over glass plates. It is used in constructing small toy balloons, for making wood and fabrics waterproof, for coating to render pills and other medicinal preparations tasteless, and for a variety of other purposes.


ROBERT COLLYER.

COLLYER (kŏl'yĕr), **Robert**, American clergyman, born in Keighley, England, Dec. 8, 1823; died Nov. 30, 1912. His early life was spent in a factory at industrial employment. Later he became a blacksmith, pursuing private study for the Methodist ministry, and was admitted as a local preacher in 1843. A few years later he came to the United States. In 1859 he united with the Unitarian Church and engaged as pastor in Chicago. He organized the Unity Church in that city in 1860, and the following year became camp inspector for the Sanitary Commission. In 1879 he removed to New York City and became pastor of the Church of the Messiah. Besides a large number of sermons he published several books, among them "Talks to Young Men," "A Man in Earnest," "The Life that Now Is," and "The Simple Truth."

COLMAN (kōl'man), **Norman Jay**, public man, born near Richfield Springs, N. Y., May 16, 1827. He attended the public schools and in 1847 removed to Louisville, Ky., where he studied law, and afterward practiced in Saint Louis, Mo. During the Civil War he served in the Federal army as lieutenant colonel of volunteers, and in 1874 was elected Lieutenant Governor of Missouri. President Cleveland appointed him United States commissioner of agriculture in 1885, and when the Department of Agriculture was reorganized he became the first Secretary of Agriculture and a member of the presidential Cabinet. He published a number of valuable reports and public documents relating to agriculture. He died in 1911.

COLMAR (kôl'mär), **or Kolmar, a city of** France, in Alsace-Lorraine, forty miles southwest of Strassburg. It is finely situated on the Lauch River, near the base of the Vosges, and is the converging center of several important railroads. The principal buildings include a college, a theater, a townhouse, and a cathedral. Among the chief manufactures are cotton goods, leather, hosiery, cutlery, ribbons, and machinery. It has a considerable trade in produce and merchandise. Colmar has electric railways, stone and asphalt paving, gas and electric lights, and a number of fine public schools. By the Peace **of Ryswick, in 1697, it was ceded by Germany to**

France, was returned to Germany in 1871, and again ceded to France in 1919. Pop., 1925, 46,843.

COLOGNE (kō-lōn′), (German, Cöln), the capital of Rhenish Prussia, Germany, on the Rhine River. It is strongly fortified, a number of its fortifications dating from the Middle Ages, but they have been vastly improved by the construction of modern defenses. It has a number of famous churches of various styles of architecture, including the Romanesque, Gothic, and Transition. The Cathedral of Cologne (see Architecture) is the finest specimen of Gothic architecture in Europe. It was built in the reign of Charlemagne, and was burned in 1248, but was rebuilt soon after, although it was not fully completed until 1880. The cost of this magnificent structure is estimated at more than $10,000,000. The city is remarkable for its beauty and educational facilities. Its streets, public boulevards, botanical gardens, and zoölogical institutions are among the finest in Europe. The public school system and higher institutions of learning take high rank, while the public library and monuments embody much beauty and value. It is extensively connected by electric lines and railroads, and has a large interior and river navigation commerce. The manufactures embrace fabrics, clothing, musical instruments, glue, toys, tobacco, machinery, and the celebrated *eau de Cologne,* or Cologne water. It has grown with remarkable rapidity in commerce since the beginning of the 20th century. Cologne dates from an early period of European history. It was founded about 30 B. C. by the Ubii. In 870 it became a part of the German Empire, entered the league of the Hanseatic cities in 1201, and was joined to Prussia in 1801. Population, 1905, 428,722; in 1920, 516,167.

COLOMBIA (kō-lōm′bē-ä), a republic of South America, located in the northwestern part of that continent. It is bounded on the north by the Caribbean Sea, east by Venezuela and Brazil, south by Ecuador, and west by the Pacific Ocean and the Republic of Panama. The location is between latitude 3° south and 12° 30′ north and between longitude 67° 30′ and 83° west. Choco Bay, Tumaco Bay, and Cupica Bay are the chief indentations on the Pacific Coast, while the Gulf of Darien is the principal inlet on the Caribbean Sea. The area is not definitely known, since some of the territory usually included is claimed by Peru, Ecuador, and Brazil, but it is generally given at 473,000 square miles.

DESCRIPTION. The surface may be divided into two regions, the great plains or llanos of the southeastern part and the Andean Cordilleras of the western section. A valley separates the Cordilleras from the highlands of Panama. The central range of the Cordilleras is the most elevated, including the volcanoes Tolema and Huila, the former reaching an altitude of 18,000 feet. The valley of the Magdalena River separates the central range from the eastern Cordilleras, which includes great tablelands and several mountains which are about 16,000 feet above the sea. In the eastern part is a great plain with streams tributary to the Orinoco and Amazon rivers. The coast line, including the indentations, is about 2,800 miles long, about half of which is on the Caribbean Sea.

The rivers belong to three systems of drainage, those flowing into the Pacific, those of the Caribbean Sea, and those draining by the Orinoco and Amazon into the Atlantic. Through the east central part flows the Magdalena, which traverses the country almost the entire distance from south to north and discharges into the Caribbean Sea. The Atrato flows northward near the western shore and discharges into the Gulf of Darien, while the Cauca is the chief tributary of the Magdalena. Among the principal affluents of the Amazon are the Japurá and the Uaupés, while the Meta and the Guaviare are the principal tributaries of the Orinoco.

The climate varies materially in different sections. It is hot in the valleys, especially where the mountains tower to considerable heights, and the tablelands are pleasant. Two rainy seasons occur in the mountainous parts, while the coast region has an abundance of rain at all times of the year, and the extreme southwestern part is quite dry. The thermometer frequently registers about 100 at Magdalena and in the eastern plains, but sea breezes make the climate pleasant along the Pacific.

FLORA AND FAUNA. The flora is greatly varied, ranging from the tropical plant life of the lower regions to scant vegetation of the elevated tablelands. Among the forest trees are many varieties of palms, including the lofty wax palm and the useful rubber tree. Forests of considerable density clothe the mountains up to a short distance from the timber line, which is located about 10,000 feet above the sea. The region is well grassed and produces many medicinal plants, such as the aloe and sarsaparilla. The plains in the eastern part are covered with nutritious and useful grasses.

Colombia has many wild animals, such as the tapir, jaguar, sloth, puma, and ant-eater. Several species of the red deer are abundant on the plateaus, and numerous kinds of monkeys are found widely distributed. Among the birds are the condor, toucan, vulture, and humming bird. The reptiles include serpents, turtles, and lizards.

MINING. Nearly all the precious and useful minerals abound, but mining has not been developed to a considerable extent. Gold mining is carried on chiefly in Antioquia, and silver mines are worked in Cauca and Tolima. Valuable deposits of coal occur in the eastern Cordilleras, and emeralds are found in the state of Boyaca. Salt mining is a government monopoly and is carried on chiefly in the vicinity of Nemocón and Zipaquirá, where extensive deposits of salt rock and salt springs abound.

Other minerals known to exist include lead, copper, iron, and platinum.

AGRICULTURE. Farming is the principal industry, but the methods are still primitive. It is confined largely to the elevated plateau in the western part, where the climate and soil are very favorable. Sugar cane, coffee, cacao, and tobacco are cultivated largely in the warmer districts, while corn, maize, and barley are the leading crops in the more temperate parts. Fruit is grown very extensively, especially the banana, orange, apple, and lemon. The tolu, valuable for its balsam, thrives in the uplands, and the rubber tree is native and yields large quantities of commercial rubber. All the domestic animals common to North America thrive, but cattle raising is receiving the greatest share of attention.

TRANSPORTATION. Public highways have been constructed in the settled districts, but the railroad lines do not exceed 700 miles. Many of the railways are short, ranging from 15 to 100 miles, and are operated largely as a means of connecting the streams or to penetrate a short distance inland from the coast. The Magdalena is the most important stream for inland navigation and together with the Cauca reaches the chief points of the interior. A considerable distance of the lower Atrato is navigable, and communication with the Orinoco is facilitated through the Meta River. Telephone and telegraph connections are abundant, and many steamers carry trade to the ports of Europe and North America.

MANUFACTURES AND COMMERCE. Manufacturing is confined largely to articles used in domestic consumption. They include straw mattings, cotton fabrics, pottery, and Panama hats. Sugar is manufactured to a considerable extent, and the goverment has a monopoly of the distillation of liquor from sugar. The chief exports include cattle, coffee, minerals, hides, and fruits, while the imports embrace principally flour, petroleum, ironware, drugs, chemicals, and machinery. Trade with the leading nations in the order named is with the United States, Great Britain, Germany, and France. The imports slightly exceed the exports.

GOVERNMENT. The government is constitutional, with the chief administrative power vested in a president chosen for six years by an electoral college. A ministry of six members assists the president, and there is a council of state of six members. The congress has full legislative power, and consists of a senate and a house of representatives; the former, of 24 senators, three from each of the eight departments, and the latter, of 66 representatives. A supreme court of seven judges, nominated by the president and confirmed by the senate, has the highest administration of justice, and subject to it are the supreme and provincial courts. Each of the states has a governor and is divided into smaller districts corresponding to a county in Canada or the United States. The army and navy are made up of all able-bodied citizens, but the peace organization embraces only about 1,500 men.

INHABITANTS. Colombia is inhabited by a people of Spanish descent. Roman Catholic is the official religion, but other denominations have been granted freedom in building churches and conducting public worship. The educational interests have been developed by a system of common schools supported by the government. Elementary education is free, but not compulsory, and many private and parochial schools are maintained. Among the special and higher institutions are several normal schools, an agricultural college, four general colleges, and a national university. Spanish is the spoken and written language. Bogotá, in the west central part, is the capital and largest city. Barranquilla and Cartagena, both on the Carribean Sea, and Buenaventura, on the Pacific, are the principal seaports. Magdalena, on the Magdalena River, is important as a river port and has connection by railway with Cartagena. Other cities of importance include Medellin, Papayan, Sonsón, and Socorro. Population, 1923, 5,879,674.

HISTORY. The country now forming most of Colombia was formerly called New Granada. It was discovered in 1499 by Alonzo de Ojeda and was visited by Columbus in 1502, while he was on his fourth voyage to America. The first settlement was made by the Spanish at Santa Maria, in the Gulf of Darien, in 1510, and the whole region was organized as a province in 1547 under a captain general. In 1811 New Granada declared its independence from Spain and effected its liberation with the help of Venezuela, after a war lasting eleven years. The two states united with Ecuador under the name of Colombia, but separated in 1831 into three independent republics. New Granada adopted a constitution in 1863 and became known as the United States of Colombia. In 1884 the country was suddenly thrown into a revolution, which was terminated in 1886 and a new constitution was adopted, which gave the country a more strongly centralized government. Another revolution occurred in 1903, when Panama broke away from the mother country and organized as an independent republic. Since then the country has had an era of peace and is making material strides in constructing internal improvements and enlarging its influence among the states of South America.

COLOMBO (kō-lŏm'bō), a seaport city and the capital of Ceylon. It is an important center for railway and navigation commerce. Among the public buildings are a museum, the government house, the supreme court, and several educational buildings. The post office and the palace of the governor are on Queen Street, which is the principal thoroughfare. A large majority of the houses are of one story, each having a veranda in front, and few are furnished by doors and windows. The harbor affords vast accommodations and has been improved by an extensive breakwater. Electric lights, street railways, and other municipal facilities have been provided. The city was founded by the Portuguese and was captured by the British in 1796. Population, 1922, 221,508.

COLÓN (kō̇-lō̇n′), or **Aspinwall,** a seaport in the republic of Panama, important on account of its location on the Caribbean Sea, forty-nine miles northwest of the city of Panama. It is situated at the northern terminus of the Isthmian Railway, near the Atlantic extremity of the Panama Canal, and has a deep harbor on Navy Bay. The site is low and somewhat unhealthful, but has been improved materially by constructive work of the United States in the Panama Canal zone. The streets are wide and regularly platted and are improved by grading and drainage. Among the chief buildings are a number of schools and churches, several fine business establishments, and the structures erected by the government. Colón was first named Aspinwall from its founder, who built the Isthmian Railway, but it is officially known as Colón, so named in honor of Columbus. A fine statue of Columbus was erected in one of its public places in 1883. Population, 1922, 24,825.

COLONNA (kō̇-lŏn′nȧ), **Cape,** the most southerly point of Attica, Greece. The ruins of the celebrated temple of Minerva, of which sixteen columns of white marble remain, are on its highest elevation, 270 feet above the sea.

COLONNA, Victoria, poetess, born at Marino, Italy, in 1490; died in Rome, Feb. 25, 1547. She was the daughter of Fabrizio Colonna, high constable of Naples, and married at the age of seventeen years to Ferdinand, Marquis of Pescara. Her husband was slain in the Battle of Pavia in 1525, after which she cultivated her poetical genius, and devoted her poetry to the memory of her husband. The most noted of her productions is "Rime Spirituali," remarkable for its sentiment of truth and piety.

COLONY (kŏl′ō̇-ny̆), a company of people who associate together for mutual advantage in the settlement of a remote country. The colonists usually have a common object and unite on account of similar social interests, or religious or political views. They may migrate from different countries, or from a single country. This mode of settlement is called *colonization,* and is due largely to the over-population or the suppression of certain liberties in the mother country. The name *colony* is commonly applied to a foreign dependency of a state or country. These dependencies are secured in various ways, often by settlement of large numbers, by purchase, or by wars of conquest. The tendency of Germany for many centuries was to direct emigration to various favorable regions for commercial enterprises, personal development, or religious liberty without seeking to profit by foreign possessions. Great Britain adopted a policy of colonization, directing emigration thither, and later sought to secure control by diplomacy or war. Spain and various other nations sent armies abroad largely for conquest by the sword, though many settlements were made under their direction similar to those of Germany and England.

ANCIENT COLONIES. The Phoenicians, the Greeks, and the Romans were the principal promoters of colonization among the ancient nations of which we have an authentic history. The Phoenicians, though a small people, founded a majority of the most powerful colonies of antiquity. Isaiah called Tyre the daughter of Sidon, meaning that Tyre was originally a Sidonian colony. Later Tyre founded important colonies, such as Carthage in Northern Africa and Cadiz in Spain. Colonies were sent from almost every Greek state. They settled the whole of West Asia Minor, the islands of the Mediterranean Sea, and southern Italy, and extended into southern France. The colonies of the Phoenicians and Greeks were small states with a form of government which was almost entirely independent of the mother country, while Rome made her colonies subject to the parent government. The Roman colonies were of two classes, civil and military. Coins issued for the former contained a plow, while those of the latter were decorated with warlike designs. The Roman colonies extended over a vast area of Eurasia and Africa. Where they became sufficiently strong, the languages of the native races were modified or displaced by the Latin, the effect of which is seen in the modern French, Spanish, Italian, and Portuguese. The present languages of these peoples are modifications of the old Roman tongue and bear much similarity to the Roman.

PORTUGUESE AND SPANISH COLONIES. The Portuguese rank as the first great colonizers of modern times. They descovered Madeira in 1419, and shortly after followed the discovery of the Azores, the Cape Verde Islands, the Congo River, the Cape of Good Hope, and the Malabar coast of India. Later they established trading posts at Mozambique and Sofala in Southeastern Africa, at Muscat and Ormuz on the Persian Gulf, on the western coast of India, and at Goa and Daman. Their colonies in Ceylon were established in 1505, and were followed by settlements in the Moluccas, Brazil, India, and other localities. The foreign possessions of Portugal now include the Cape Verde and other islands, and several districts in Africa and Australasia. The Spanish colonization policy was one of the most extensive in the world. Columbus sailed under the Spanish flag in 1492 and discovered the island of San Salvador. His subsequent discoveries and those of other Spaniards caused Spain to occupy all of South America, except Brazil. The Spaniards also occupied Central America, Mexico, the East Indies, the Philippine Islands, large portions of the territory now included in the United States, and many other regions. However, the Spanish colonies have dwindled down to insignificance, owing to continued wars and dissensions.

DUTCH AND DANISH COLONIES. The Dutch were among the greatest colonizers. In 1620 several companies were formed to monopolize trade in the East Indies, at the Cape of Good Hope, in South America, in continental Asia, Australia, and many islands of the sea. Wars with France, Spain, and England caused a loss of many Dutch possessions. Their foothold in New York was absorbed early by the English, and later various other possessions passed from their control. The most important possessions now controlled by them are in the East Indies. Denmark has long pursued a policy of colonization. The dependencies of this nation are of considerable extent, but of small value. They include the Faroe Islands, Iceland, Greenland, a number of islands of the East Indies purchased of France in 1733, and several others colonized by them.

FRENCH COLONIES. France has long ranked as a colonial power. Citizens of France began colonizing in 1627 in various portions of the world. The most valuable parts of North America were once under the dominion of the French, and they likewise possessed vast colonies in Asia and numerous island archipelagoes. Their northern possessions in North America were lost in several wars with the British, while the western portions were sold by Napoleon in 1803 to the United States. The chief colonies of France at present include those in India, Tonquin, Anam, and Cochin China in Southeastern Asia; Tunis, Algeria, Madagascar, Guiana, and various islands, the whole constituting a large area of valuable regions.

BRITISH COLONIES. England began colonization in 1585 by encouraging settlements in North America, but made little success until 1607, when the first permanent settlement was made at Jamestown. Later, territories were acquired in Asia, Australia, Africa, and many islands of the sea. The principal possessions of the British now include Australia, British America, South Africa, most of India, Belize, Guiana, Ceylon, New Zealand, Tasmania, and various islands in different parts of the oceans and seas. The British possessions and dependencies embrace nearly one-sixth of the land surface of the earth and fully one-seventh of mankind.

GERMAN AND OTHER COLONIES. Germany has mainly directed its emigration to foreign countries without attempting to secure permanent foothold until the time of Bismarck. However, its colonies were lost through the Great European War. The principal German possessions included a portion of New Guinea, the Bismarck Archipelago, Cameroon, Togoland, German East Africa, German Southwest Africa, the Caroline Islands, Kiauchau, in China, and a number of islands. Various other European powers have a foreign colonial policy, especially Italy and Russia. The latter country is operating more particularly in the northern and western regions of Asia, and is endeavoring to control the larger portion of that continent, making its possessions largely contiguous to its home central government. The United States entered upon a colonial policy in 1898 by the annexation of the Hawaiian Islands. After the war with Spain, in 1898, Porto Rico, Guam, and other islands were annexed. The Philippine Islands are the largest colonial possessions of the United States.

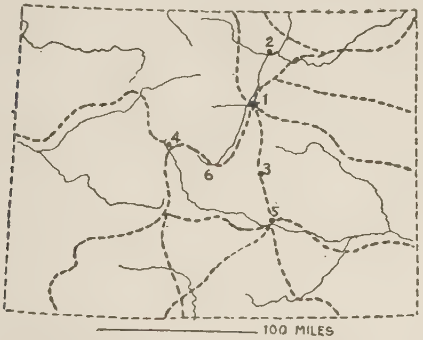
The experience of past ages demonstrates clearly that the possession of foreign territory does not add to the stability of a nation. Hostilities generally growing out of the purchase or conquest of a region which is populated by an unfriendly people require a vast navy and a large colonial army even in the time of peace, while racial and commercial complications may be the causes of insurrections at any time. The colonial policy of Spain, though continuing for over 300 years, ultimately almost bankrupted the nation, while Great Britain, because of her vast colonial interests, has need for large naval and military forces. Aside from spreading particular religious beliefs and languages, no permanent advantages have accrued to the nations having colonial policies, while many have been materially weakened at home and even brought to a condition of retrogression. Colonization has given to Brazil the Portuguese language, and to all the rest of South America, Central America, and Mexico the Spanish, while all these vast regions have become Roman Catholic in religion. The English language has been carried to the United States, British America, Australia, and other regions in the same way.

COLOPHON (kŏl'o-phon), one of the twelve Ionian cities on the coast of Asia Minor, located eight miles north of Ephesus, on the Halesus River. It was celebrated for its navy and cavalry, and was one of the seven cities that claimed to be the birthplace of Homer.

COLOR (kŭl'ẽr), that quality of bodies by which they present different appearances in respect to hue or tint to the eye. In optics, color is studied chiefly in connection with the *solar spectrum,* which is the spectrum of solar light. The white lines that reach us from the sun disperse or decompose into several colors when passed from one medium into another. The solar beam may be developed into seven colors by means of a prism. They are red, orange, yellow, green, blue, indigo, and violet. Red, violet-blue, and yellow are considered *fundamental* colors. Sir Isaac Newton was the first to decompose white light by a prism and then recompose it. According to his theory, bodies decompose light only by reflection, their colors depending upon their reflecting power for the different simple colors. Bodies that reflect all colors in proportions as they exist in the spectrum are white, those that reflect none are black. A wide diversity of colors exists between these two limits, this being dependent upon the extent to which bodies absorb some colors and reflect others. According to this hypothesis, it is presumed that bodies have no colors in themselves, but produce them by the kind of light which they reflect. When white light falls on a green leaf, all the colors but green are absorbed, and, this given off, makes the leaf appear green, A red cloth in the same way absorbs all colors but red, and therefore appears red. Thus, the different color effects of the beam of light depend upon the qualities of the substances on which they fall.

The rainbow is formed by drops of falling rain, through which light passes, and is separated into its prismatic colors, all the colors of the solar spectrum. Plant tissues are largely colorless, a silvery white, or a pale yellow. The green color taken on subsequently is due to the action of the solar light, which produces *chlorophyll,* the name applied to the green coloring matter of plants. The pigments or colors used by painters are distinguished from the colors of the solar spectrum. In the arts the pigments blue, red, and yellow are the *primary* hues and may be made to form any other colors, but they cannot be formed by any others. The national colors of the United States are blue, white, and red; of Germany, black, white, and red; of Russia, white, blue, and red; of Great Britain, red and blue; of Australia, red, white, and green; of France, blue, white, and red: of Spain, yellow and red; of Sweden, blue and yellow; of Denmark, red and white; of Switzerland, red and white.

COLORADO (kŏl-ō-rä′dō), a western State of the United States, located in the center of the portion of the United States lying west of the Mississippi River. It is bounded on the north by Wyoming and Nebraska, east by Nebraska and Kansas, south by Oklahoma and New Mexico, and west by Utah. The State is quadrilateral in shape and is bounded by the parallels 37° and 41° north and the meridians 102° and 109° west from Greenwich. It is about 370 miles long and 280 miles wide, and has an area of 103,925 square miles.



1, Denver; 2, Greeley; 3, Colorado Springs; 4, Leadville; 5, Pueblo; 6, Pike's Peak. Chief railroads shown by dotted lines.

Description. The continental range of the Rocky Mountains extends across the State from north to south, near its center. Pike's Peak, west of Colorado Springs, is the most famous summit in the State, but not the highest, being one of many that have an elevation of 14,000 to 14,500 feet. In the western section are three more or less prominent ranges, including the White River Mountains in the west, the Park and Saguache somewhat farther east, and the Front Range near the Saguache. Among the mountains are numerous plateaus known as parks, of which the surface is quite fertile and the climate is healthful. Two natural divisions characterize the general surface of the State, those embraced in the mountains and the plains, the former having an elevation of 5,000 to 14,500 feet, while the latter is located from 4,000 to 5,000 feet above the sea. In many places the scenery is beautiful and grand, especially in the localities known as Monument Park and the Garden of the Gods.

The western part of Colorado is crossed from north to south by the great continental divide. On the eastern slope, flowing toward the Mississippi, are the South Platte and Arkansas rivers. The Rio Grande drains the San Luis Valley, while the Grand flows toward the southwest. The Yampa and White are tributaries of the Green, which unites with the Grand in eastern Utah and forms the Colorado River. None of these rivers is navigable, but they with their numerous branches furnish a supply of water for irrigation purposes. A large number of the streams flow through canyons which are noted for their grandeur, and in many places are cold and thermal springs with distinctive medicinal properties. The most noted springs are located at Manitou, Cañon City, Idaho Springs, Glenwood Springs, Hot Sulphur Springs, Steamboat Springs, and Pagosa Springs.

The climate is delightful, the air is dry, and the sunshine is abundant. Rains fall throughout the warm parts of the year and snows occur in winter, but both are moderate in quantity. The altitude and dryness minimize the heat in summer and the cold in winter. The perpetual snow line varies between 13,000 and 14,000 feet, except on the side of the mountains sloping toward the north and in deep canyons, where it is considerably lower. Colorado has a mean annual rainfall of 14.8 inches, and it is distributed quite generally throughout the State, though it is heaviest in the mountains. In summer time the days are frequently quite hot, but the nights are cool and bracing. At Denver the mean temperature in January is 28.2° and in July, 71.8°.

Mining. Colorado stands high in the production of the precious metals among the states in the Union, being exceeded in the output of gold only by California, producing about one-twelfth of the total output of the United States.

It has extensive coal resources, both bituminous and anthracite, and in the output exceeds all the states west of Illinois and is high in rank among the coal-producing states, being surpassed only by Pennsylvania, Illinois, West Virginia, Ohio, Alabama, Indiana, Kentucky, and Virginia. It ranks second among the states in the output of anthracite, being exceeded only by Pennsylvania. The coal fields are situated on both sides of the Rocky Mountains, those on the western slope being the largest and most important in quantity and quality. Other minerals found extensively include lead, iron, copper, zinc, gypsum, petroleum, onyx, and kaolin. Cripple Creek, Leadville, Colorado Springs, Pueblo, Silverton, Creede, and Telluride are located in the vicinity of productive mining districts.

AGRICULTURE. Colorado was formerly regarded unsuitable for agriculture, owing to its aridity and elevation, but irrigation has been a potent influence in developing its resources. The rainfall is sufficiently large in some parts of the State in particularly favorable seasons, especially to induce the vigorous growth of native grasses, and wherever water is available the investments in farming are very profitable. The main canals and ditches constructed for irrigation have a total length of about 12,000 miles and the farms average 384 acres, which is much larger than the size of the average farm in the United States, due chiefly to the number of holdings used for stock grazing. Alfalfa is grown very extensively for fodder and yields from one to three cuttings per year. The culture of sugar beets has grown extensively the last decade, and the output is valued at about $35,500,000 annually. Other crops grown extensively are cereals, fruits, potatoes and vegetables.

The State is favored with the growth of many nutritious grasses suitable for grazing, and stock raising was an important industry before general farming was attempted. Large herds of cattle are grown for meat and dairy products, both of which form important items in the business enterprises. Sheep raising is possible in all sections, but the largest flocks are in the southern counties. Swine are not raised as extensively as in the states of the Mississippi Valley, owing to the fact that corn is grown on a comparatively smaller area, but horses and mules are reared in large numbers.

TRANSPORTATION AND COMMERCE. None of the rivers is navigable, but the State has many lines of railroads, aggregating about 5,250 miles, and they are well distributed in all sections. The lines include a number of the trunk railways which connect the commercial centers of the State with the business emporiums of the Mississippi Valley and the Pacific Coast, including many branch lines that penetrate in all directions, affording unexcelled highways of commerce. Denver is noted as a market and wholesaling and jobbing center.

MANUFACTURING. The great variety of raw materials give Colorado advantages as a manufacturing State. Among the leading industrial establishments are the iron and steel works at Pueblo and the foundries and machine shops at Denver. Coke is manufactured extensively, the State ranking fourth in the quantity of this product. A fine quality of brick clay is abundant in many localities, especially in the vicinity of Denver, where the brick plants have a large output. Other industrial enterprises include flouring and grist mills, canning factories, creameries and cheese factories, printing and publishing plants, beet sugar factories, and gold, silver, copper, and lead smelting works. Sawmills are located in many places for cutting fir, pine, and spruce forests, which cover a large area in the mountains below the snow line.

EDUCATION. Ample provisions have been made for the education of the youth. The State has a permanent school fund obtained from the sale and rent of about 3,550,000 acres of school land, and the income is apportioned among the schools of the State. The University of Colorado is located at Boulder; the State School of Mines, at Golden; the State Agricultural College, at Fort Collins; the State Normal School, at Greeley; the Mute and Blind Institute, at Colorado Springs; and the Industrial School, at Golden. Many private and denominational schools and institutions of higher learning are maintained, including Denver University, Denver, and Colorado College, Colorado Springs.

GOVERNMENT. The constitution was adopted by a vote of the people in 1876, when the State was admitted, but it has been amended several times. It requires a residence of six months as a prerequisite to vote and extends the right of suffrage to both sexes at school elections, and in addition provides that the Legislature may extend the right of suffrage to women, which was done before the 19th Amendment was adopted. Executive authority is vested in the governor, lieutenant governor, secretary, treasurer, auditor, attorney-general, and superintendent of public instruction, each being elected for two years. The legislative functions are vested in the Legislature, which consists of the Senate and the House of Representatives. Senators are elected for four and representatives for two years. The aggregate membership in both houses cannot exceed 100. At present there are thirty-five senators and sixty-five representatives. The judicial power is vested in a supreme court, the district and county courts, justices of the peace, and such other courts as may be provided by law. Local government is administered by counties, townships, and municipalities.

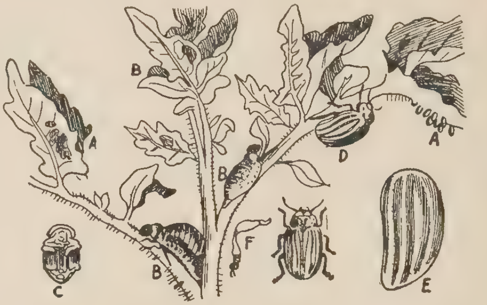
INHABITANTS. Colorado has a larger population than any of the Rocky Mountain states. About one-fifth are of foreign birth, and fully forty per cent. reside in the cities with a population of over 4,000. Denver, the capital, is the largest city and chief commercial center. Other flourishing cities include Pueblo, Colorado Springs, Leadville, Greeley, Sterling, Boulder, Trinidad, Salida, and Rockyford. The State has had a steady growth in population, which, in 1900, was 539,700; in 1920, 939,376.

History. Colorado was acquired in three sections. About one-half was acquired from France by the Louisiana Purchase in 1803; a portion of the west and north, by the Mexican Cession of 1848; and the remainder, by purchase from Texas in 1850. Coronado visited the region in 1541. He is supposed to have been the first white man to set foot within the present limits of the State, which received its name from him. Zebulon Pike explored the region under the authority of the government in 1806. The next expedition was undertaken in 1819 by Stephen S. Long, and John C. Frémont began a series of five explorations in search of practical railway routes in 1842. Immigration was attracted by the discovery of gold in 1858, at which time the parks were inhabited by the Ute Indians and the plains were occupied by the Cheyennes, Arapahoes, Kiowas, and Comanches. In 1861 it was organized as a Territory and was admitted as a State in 1876, hence is popularly known as the *Centennial State.* In 1893 the State adopted woman suffrage at a special election by a majority of about 4,500 votes. The capitol building, which cost about $2,500,000, was completed at Denver in 1894.

COLORADO, University of, an educational institution at Boulder, Colo. It was incorporated by the territorial Legislature in 1861, and became the State university by the provisions of the constitution of Colorado in 1876. When it was opened formally, in 1877, it embraced a preparatory department and the college proper, to which were added the medical school in 1883, the law school in 1892, and the school of applied sciences in 1893. At present it embraces five departments, including the college of liberal arts, the graduate department, the school of law, the school of applied science, and the medical school. It is maintained by a direct tax upon the properties of the State and is governed by a board of regents. The library contains about 177,200 volumes. The faculty consists of 272 professors and instructors and the average annual registration of students is about 2,850.

COLORADO BEETLE, better known as potato bug, an American beetle first described by Thomas Say in 1824 from specimens found by him in Missouri. It was first noticed as a pest in the potato fields of Colorado, hence its name. Subsequently it moved eastward rapidly, and reached the Atlantic coast in 1874. It is of a yellowish color, with black stripes along the back. The young are reddish, fleshy, and soft, and do most of the damage to the growing plants.

COLORADO RIVER, a river of Texas, rises near the southeastern boundary of New Mexico, and discharges into the Gulf of Mexico through Matagorda Bay. The Llano, San Saba, and Concho are its chief tributaries. Among the chief cities located on its banks are Austin, Bastrop, Bay City, Lagrange, and Wharton. It is navigable for small boats to Austin, a distance of about 200 miles, and the total length is about 900 miles.

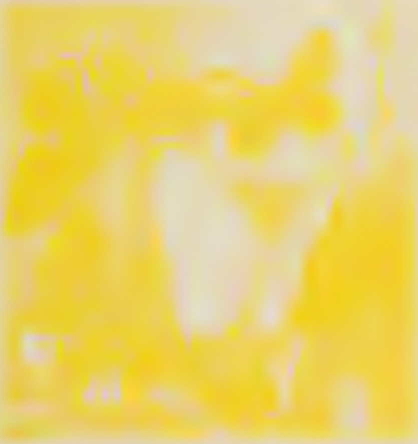


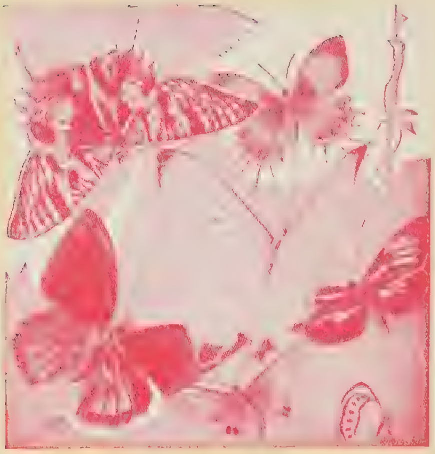
COLORADO BEETLE.

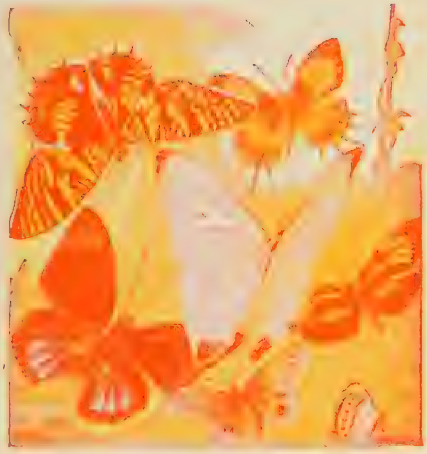
A, Eggs; *B*, Larvae; *C*, Pupa; *D*, Adults; *E*, Wing (magnified); *F*, Leg (magnified).

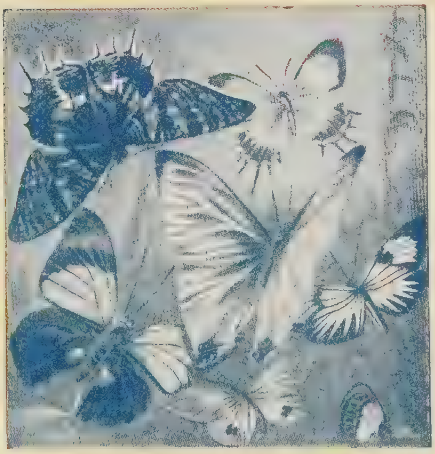
COLORADO RIVER, a large river of the United States, formed in the southeastern part of Utah by the junction of the Green and Grand rivers. It flows south and west in Utah, passes through the northwestern part of Arizona, and forms the boundary between Arizona on the east and Nevada and California on the west. Near its mouth it passes into Mexico and discharges into the Gulf of California. The length of the Colorado River proper is 900 miles, but with the Green, its largest confluent, it has a course of nearly 2,000 miles. It is remarkable for its great canyons, the principal one being the Grand Canyon. This natural phenomenon is about 300 miles long, with perpendicular walls at some places fully 6,000 feet above the water. In the northern part of Arizona the Grand Canyon is five to six miles wide at the top and 6,000 feet deep, narrowing by successive depressions until the narrow and gloomy gorge in which the river flows is reached, where the descent is almost perpendicular to depths varying from 2,000 to 3,000 feet. Among the chief tributaries are the San Juan in Utah, the Little Colorado and the Gila in Arizona, and the Virgin in Nevada.

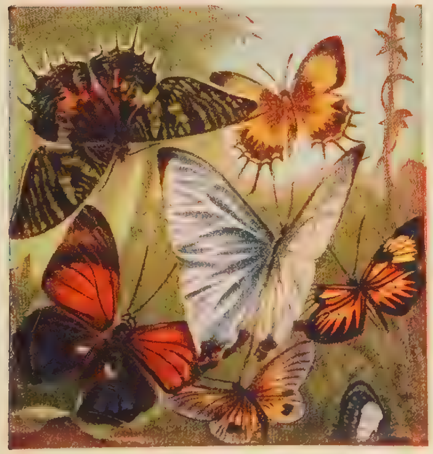
COLORADO SPRINGS, a city in Colorado, county seat of El Paso County, sixty-five miles south of Denver, on the Denver and Rio Grande, the Santa Fé, and other railroads. It is the seat of Colorado College, an institution which carries full college courses. This institution has a library of 65,000 volumes, a faculty of forty instructors, and about 900 students. Ten miles from the city is Pike's Peak, which lifts its snowy summits in great beauty and may be reached by several railways. Manitou is a health resort six miles from the city, at the foot of Pike's Peak, and between the two cities is the wonderful Garden of the Gods. Fine natural and artificial scenery make the city one of the most delightful in the west. It has good schools, a fine trade, and numerous industries. Gas and











Method

The original design is photographed through color screens which disect the three primary colors and their combinations as they appear in the original

The negative for the yellow printing plate is photographed through a purple color screen, which absorbs the red and blue color rays, giving only the yellow color values upon the sensitive plate or negative

The negative for the red printing plate is made through a green color screen, which absorbs the yellow and blue color rays, giving only the red color values

The negative for the blue printing plate is made through an orange color screen, which absorbs the yellow and red color rays, giving only the blue color values of the original

From these disected color negatives a print etched on copper is made, mounted on wood, and is then ready for the printing press. These three cuts are then printed on an ordinary type press in their respective colors, first yellow, then red and finally blue, with the result that the effect will be an exact reproduction of the original copy

(Opp. 633)

COLOR PRINTING.

Proof of yellow printing plate.

Proof of yellow and red combined.

Completed picture printed in yellow, red and blue.

Proof of red printing plate.

Proof of blue printing plate.

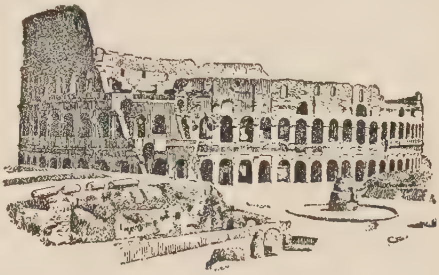
Explanation of the method.

electric lights, pavements, waterworks, and rapid transit are among its improvements. It was settled in 1870 and incorporated in 1872. Population, 1900, 21,085; in 1920, 29,572.

COLOR BLINDNESS, or **Daltonism**, a term used to describe a defect of vision, which is not usually accompanied by any other imperfection of the eye. It is incurable and peculiarly affects families, being transmitted from parents to child. The eye in a normal condition has three primary sensations, those of green, red, and violet, and color impressions are formed by the combinations of these. Color blindness is due to the absence of one of the primary sensations, usually the red or green, and very rarely the violet. About one per cent. of women and from three to four per cent. of men have a color blind vision. It is due to a defective retina or the admission of an insufficient amount of light. The latter is noticeable when examining any objects that are more or less colored by artificial light, since it is impossible to distinguish colors properly at night, except the shades of white and black. Color blindness is frequently acquired by the excessive use of tobacco and by children being confined in schoolrooms that are not sufficiently lighted. It may be detected by a selection of colored worsteds, a test devised by Prof. Holmgren of Upsala. In many countries a strict examination is required for those who are employed in the railway service, especially in the departments where color signals are used.

COLOR PRINTING, the art of producing several colors in printing. The process formerly required as many impressions as colors desired in the finished product. A card or chromo in which ten colors were desired required passing through printing presses ten different times, once for each color to be applied. Now color printing is done largely by three impressions. The principle involved is that if a photograph be taken in three colors of nature—red, blue, and green—and plates be made from each photograph by a photomechanical process, impressions of the plate may be taken in their appropriate colors, thus producing a combination which involves the colors of the original, even showing blendings much as are seen in nature.

COLOSSEUM (kŏl-ŏs-sē'ŭm), the name applied to the greatest of Roman amphitheaters. It was built in the form of an ellipse, the length being 612 feet and the breadth 515 feet. It was begun by Vespasian and was finished by Titus in the year 80 A. D. The base covered five acres, and there was a seating capacity for about 87,000 people. It ranked as the largest and most important inclosure for the celebration of the national games, and its ruins are still among the interesting relics of antiquity. Titus dedicated it by games lasting a hundred days, in which 5,000 wild animals were slain. It was surrounded by a row of pilasters, contained eighty openings on the ground story, over which were constructed three other stories, the whole rising to a height of 160 feet. Open galleries were constructed throughout the whole building, passing beneath the columns. The interior space was covered with sawdust or sand, in which the games were exhibited in the presence of vast multitudes occupying the seats in the different stories, arranged in circular order. These games were visited by the emperor, senators, and the populace, forming the most interesting of public demonstrations.



COLOSSEUM AT ROME.

COLOSSUS (kô-lŏs'sŭs), a term applied generally to statues of great size built by the people of antiquity. The most important statue of this class built by the Grecians was the *Colossus at Rhodes*, being a brass statue of Helios, the sun god, which came to be counted among the wonders of the world. It was constructed from the spoils left by Demetrius Poliorcetes when he raised the siege of Rhodes. The work was done under the sculptor Chares of Lindus, who spent twelve years in finishing the work, completing it in 280 B. C. An earthquake threw it down about 224 B. C. The statue is said to have stood upon two moles, a leg being extended on each side of the harbor so that a vessel in full sail could enter between. Some writers assume its height to have been from 100 to 125 feet. It was in ruins for nearly nine centuries, and when the Saracens captured Rhodes they pulled it to pieces and sold it to a Jew. The Jew transported it to Alexandria about 653 A. D., requiring 900 camels to effect the transportation. A number of modern memorials are known by the general name of Colossus from their enormous size, such as the *Bavaria* at Munich, the *Germania* at Niedervald, on the Rhine, and the statue of *Liberty Enlightening the World*, in New York Harbor.

COLT (kōlt), **Samuel**, inventor, born at Hartford, Conn., July 19, 1814; died Jan. 10, 1862. He was the son of a manufacturer of silk and woolen goods, made a voyage to India, and subsequently invented the Colt revolver. In 1835 he visited Europe and patented his invention at Paris and London, but did not succeed in its manufacture until the government of the United States placed an order with him for 1,000 to be used in the Mexican War. He built extensive shops at Hartford, Conn., enlarged them in 1852, and built an enormous factory on the banks of the Connecticut River in 1861. His product was sold in Russia and other European countries in large quantities. See **Revolver.**

COLTSFOOT (kōlts′fo͝ot), a genus of plants native to Europe and naturalized more or less extensively in America. The common coltsfoot is a weed and is so named from the broad and heart-shaped leaves, which resemble the foot of a colt. It has yellow flowers. The leaves are somewhat glutinous and the lower side is downy. Bees seek the flowers for honey.

COLUMBA (kȯ-lŭm′bȧ), **Saint,** missionary, born at Gartan, Ireland, Dec. 7, 521; died June 9, 597. He was related to a number of rulers of Ireland and Scotland, studied at Moville, near Bangor, and was ordained deacon by Bishop Saint Finnian. In 545 he founded the church and monastery at Derry, which grew rapidly under his monastic zeal, and in 553 he established the monastery of Durrow, near Dublin. He became embroiled in the civil strife of Ireland and was excommunicated in 563 by an Irish senate on a charge of having incited the Battle of Culdreimhne. The same year he organized a company of twelve disciples and founded in Iona, one of the Hebrides, a church and monastery for the purpose of converting the Picts. He succeeded in overcoming the opposition of the Druids and was successful in promoting monasticism among them.

COLUMBIA (kȯ-lŭm′bĭ-ȧ). See **District of Columbia.**

COLUMBIA, county seat of Boone County, Missouri, 114 miles northwest of Saint Louis, on the Wabash and the Kansas City Southern railroads. It is the seat of the Missouri State University, Christian College, Stephens Baptist College for Women, and the State College of Agriculture. Besides doing a good jobbing trade, it manufactures flour, woolen goods, tobacco, books, and brick. It has a system of waterworks and a monument to Thomas Jefferson. The first settlement in the vicinity was made in 1820. Population, 1920, 10,681.

COLUMBIA, county seat of Maury County, Tennessee, on the Duck River, forty-five miles south of Nashville. It is on the Louisville and Nashville and other railroads, and is surrounded by a fertile farming country. Phosphate is produced in the vicinity. The chief buildings include the courthouse, Jackson College, two seminaries, and a U. S. Military Academy. Flouring mills, grain elevators, and cotton mills are among its industries. The city has electric lights, waterworks, and a sewerage system. It was settled in 1811 and incorporated in 1822. Population, 1900, 6,052; in 1920, 5,526.

COLUMBIA, a borough of Pennsylvania, in Lancaster County, on the Susquehanna River, eighty miles west of Philadelphia. It is on the Pennsylvania and the Philadelphia and Reading railroads. On the opposite side of the river is Wrightsville, with which it is connected by a bridge about a mile in length. It has a large trade in merchandise. The chief industries include cotton, flouring, and planing mills, iron foundries, stove works, and shops for the production of implements, railroad iron, and steam engines. Among the public utilities are waterworks, stone and macadam pavements, and electric street railways. Columbia was founded by the Quakers in 1726, when it was known as Wright's Ferry. Population, 1920, 10,836.

COLUMBIA, the capital of South Carolina, in Richland County, on the Congaree River, 128 miles northwest of Charleston. It is on the Seaboard Air Line, the Atlantic Coast Line, and the Southern railroads, and has transportation facilities by the Congaree River and the Columbia Canal. The site is on a beautiful plateau, about 200 feet above the river, and affords an excellent view of the surrounding country. The city has broad streets, many of which are macadamized and paved, and the residential sections are beautified by parkings and avenues of trees. The State capitol is a fine structure of granite, erected at a cost of $3,000,000. Other noteworthy buildings include the Federal courthouse and post office, the city hall, and a number of excellent public schools and churches. It is the seat of the South Carolina University, which was organized as a college in 1806 and changed to a university in 1880. Other institutions of learning include the Ursuline Convent, the Presbyterian Theological Seminary, and the Winthrop Normal College. The State University has a library of 80,000 volumes, besides which other libraries are maintained. Among the industries are commerce and the manufacture of cotton goods, tobacco products, machinery and furniture. It has extensive systems of waterworks, sewerage, and electric street railways. Columbia was settled in 1700 and became the State capital in 1786. General Sherman captured it in 1865, when a large part of the city was destroyed by fire. Population, 1920, 37,524.

COLUMBARIUM (kŏl-ŭm-bā′rĭ-ŭm), a structure of vaults in Roman burial places lined with recesses for urns, so named from a resemblance to a dove-cote. They occur in the walls of ancient sepulchral chambers, and are now built in modern crematories and vaults, used to contain the cinerary urns. Only the poorer classes used columbariums in ancient times, especially those who could not afford separate tombs. Examples of these structures are found near Rome and at Naples, where they were built by funeral associations or by rich people to accommodate their servants and slaves.

COLUMBIA RIVER, an important river of North America, rises in British Columbia, flows through Washington, forms the boundary between Washington and Oregon, and discharges into the Pacific Ocean. The total length is 1,350 miles. Its principal tributaries include the Willamette, Deschutes, Snake, Spokane, and Okanogan rivers. More than 650 miles are navigable. It contains a number of magnificent falls and rapids, and is valuable for its abundance of salmon fisheries. The scenery along its lower course is grand and in many respects surpasses that of the Hudson.

COLUMBIA UNIVERSITY, an educational institution in New York City, on Morningside Heights. It was chartered by George II. as King's College in 1754, but the name was changed to Columbia College after the Revolutionary War, in 1784. In 1896 the name was changed to Columbia University, which designates the entire institution, while the name Columbia College is restricted to the undergraduate department. At present it comprises Columbia College, Barnard College, the school of law, the college of physicians and surgeons, the school of political science and philosophy, the school of applied science, the school of fine arts, the Teachers' College, and the summer school. It has endowments of $57,456,803, an annual budget of $10,196,711, a library of 1,024,423 volumes, a faculty of 1,899 instructors, and 34,845 students, including the School of Pharmacy and University Extension. About 75,500 persons have graduated from its courses. Its courses rank among the most thorough in America.

COLUMBUS (kô-lŭm'bŭs), county seat of Bartholomew County, Indiana, on the east fork of the White River, about forty-one miles southeast of Indianapolis. It is on the Pennsylvania and the Cleveland, Cincinnati, Chicago and Saint Louis railroads. It is surrounded by an agricultural country, and has large flouring mills, machine shops, and implement and furniture factories. Among the public utilities are waterworks, sewerage, and electric street railways. It has a brisk trade in merchandise and farm produce. Population, 1920, 8,990.

COLUMBUS, a city in Georgia, county seat of Muscogee County, on the Chattahoochee River and on the Southern, the Seaboard Air Line, and the Central of Georgia railroads. It is located about 300 miles from the Gulf of Mexico, with which it has steam navigation connections. The water power of the river is unlimited, and is utilized largely in manufacturing. The manufactures include hardware, textiles, machinery, cigars, clothing, and furniture. Its cotton and woolen mills are among the largest in the South and produce vast quantities of ginghams and colored goods. Besides an extensive public school system, the city contains a male academy, a female academy, and several public buildings and churches. The streets are broad and improved by pavements and avenues of trees. It has gas and electric lights, street railways, waterworks, pavements, sewerage, and a public library. Columbus was platted in 1828 and incorporated in 1829. Population, 1900, 17,614; in 1920, 31,125.

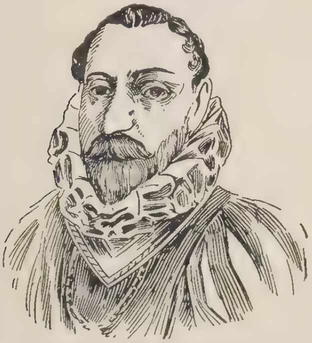
COLUMBUS, the capital of Ohio, county seat of Franklin County, on the Scioto River, 100 miles northeast of Cincinnati. It occupies a fine site near the geographical center of the State, on the Baltimore and Ohio, the Pennsylvania, the Cleveland, Cincinnati, Chicago and Saint Louis, and other railroads. An extensive system of electric railways furnish facilities to reach all parts of the city and many suburban and interurban localities. Natural gas is utilized largely for manufacturing and by private families for fuel and lighting. The leading industries include wholesaling and the manufacture of locomobiles, machinery, implements, cigars, clothing, furniture, earthenware, boilers, and engines. It has a large trade in coal, petroleum, and farm produce.

The public parks of the city cover about 1,000 acres and contain many improvements and attractions. Among the public structures are a fine State capitol, the State fair grounds, the United States garrison, and the Ohio State University. The capitol building is in the Doric style and cost about $2,500,000. It is the seat of the Capital University (Lutheran), the Columbus Law School, and the Columbus Art Institute. It has a hospital for the insane, asylums for the blind, deaf, and dumb, and a State penitentiary. In its public places are monuments erected to James A. Garfield, Salmon P. Chase, U. S. Grant, and W. T. Sherman. Columbus was platted in 1812, made the capital of the State in 1816, and incorporated in 1834. Its location in the center of the State and within a vast field of iron, coal, petroleum, and gas has given it marked commercial advantages. Population, 1900, 125,560; in 1920, 237,031.

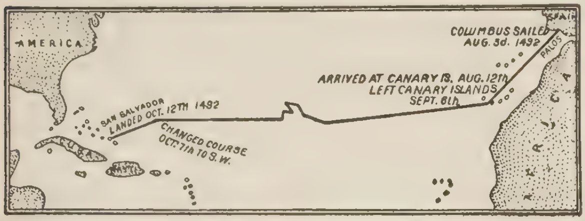
COLUMBUS, county seat of Lowndes County, Mississippi, on the Tombigbee River, and on the Southern and the Mobile and Ohio railroads. It is surrounded by coal and iron fields, and has cotton mills, machine shops, foundries, and lumber yards. Columbus is the seat of several educational institutions, including the State College (for women). It has a county courthouse, a public library, and waterworks. It was settled in 1830 and incorporated in 1832. Population, 1900, 6,484; in 1920, 10,501.

COLUMBUS, Bartholomew, eldest brother of Christopher Columbus, born at Genoa, Italy, about 1445; died in San Domingo, West Indies, in 1515. His early life is unknown. He made a voyage along the western coast of Africa, passing as far south as the Cape of Good Hope. In 1488 he visited Henry VII. of England to interest him in the plan of a western voyage of discovery, but failed. He accompanied his brother on his second voyage to America and was made governor of Hispaniola. When Christopher Columbus was imprisoned, he shared his misfortunes, but later was honored by being made governor of Mona. He was the founder of the colony of San Domingo.

COLUMBUS, Christopher, eminent navigator, born near Genoa, Italy, about 1436; died in Spain, May 20, 1506. He became a sailor at the early age of fourteen years. His father was a wool comber and sent him to Pavia to secure an education, where he developed a taste for astronomy and geography. He settled in Lisbon in 1470 and married the daughter of an Italian named Bartholomé Palestrello. Obtaining some charts and assistance from his father-in-law, he studied and constructed many maps. His first voyages were to the Azores, the Canaries, and the coast of Guinea.


CHRISTOPHER COLUMBUS.

In 1492 Columbus laid his plan before John II. of Portugal with the view of securing assistance and making an extended voyage of discovery, but was refused aid after the latter had submitted the plans to a body of nautical and scientific men. He next proceeded to Genoa for the same purpose, and, again failing, sailed for Spain, where he received assistance after laboring seven years at the court of Ferdinand and Isabella. The conditions upon which Columbus undertook his voyage of explorations included that he should be appointed governor general and viceroy over the lands that he might discover, with an allowance of one-tenth of the products. He set sail on Aug. 3, 1492, with 120 men and three small vessels or caravels called the *Santa Maria, Pinta,* and *Nina.* The voyager started from Palos, took a westerly course, and reached land in the Bahama group on Oct. 12, 1492; the land discovered is thought to have been Watling's or Samana Island. He next discovered Cuba and Haiti, planted colonies on them, and returned home in March, 1493.

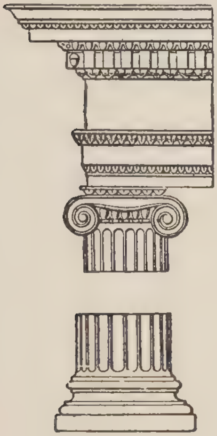

AMERICA
CUBA
HAITI
SAN SALVADOR LANDED OCT. 12TH 1492
CHANGED COURSE OCT. 7th TO S.W.
COLUMBUS SAILED AUG. 3d. 1492
PALOS
ARRIVED AT CANARY IS. AUG. 12th
LEFT CANARY ISLANDS SEPT. 6th
AFRICA

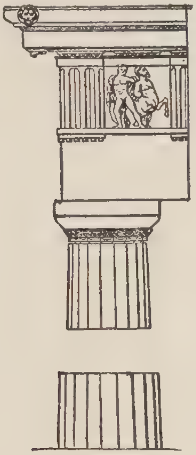
Columbus made a second voyage the following autumn, taking with him a larger expedition, this being possible because of much interest manifested by the people of the Old World. He remained in the West Indies until 1496. His third voyage was made in 1498, when he discovered the mainland of South America at the mouth of the Orinoco, thinking he had found a continent, but supposing himself to be on the eastern coast of Asia. His fourth voyage extended from 1502 to 1504, when he explored the coast of Central America. His voyages were attended with more or less dissatisfaction and insubordination of his sailors. He was imprisoned on the third voyage by his enemies and sent in chains to Spain, but was soon released. He survived Queen Isabella a short time, dying at Valladolid. At his request his remains were taken to San Domingo, but when Hispaniola came into the possession of the French they were removed, in 1796, to the cathedral of Havana in Cuba. When Spain lost Cuba, in 1898, the remains were removed to Spain.

COLUMN (kŏl'ŭm), in architecture, a pillar or post employed for the purpose of supporting a weight, such as a roof or other superstructure. In some classes of architecture the column serves chiefly as a support, but in others it is designed both to strengthen the building and to serve as an ornament. Many designs and sizes of columns were employed by the ancients, including those that may be designated as massive, decorative, smooth, square, and polygonal. The Egyptians crowded the columns together with the view of giving the building a heavy and massive appearance, while those of the Persians and Greeks were quite tall and slender. A column consists of three parts known as the *base,* the *shaft,* and the *capital.* The base is the portion on which it rests; the shaft is the central part, usually cylindrical in form; and the capital surmounts the shaft. Among the principal columns are the Doric, Ionic, Tuscan, Corinthian, and Composite.

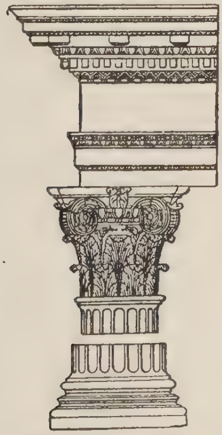
The Doric column is common among the ruins of ancient Greece and is thought to be one of the oldest classic orders. It is usually without a base and has a plain capital, and the shaft is fluted and in height is equal to five if its diameters. The Parthenon at Athens contains good examples of the Doric column. As classical architecture advanced, greater lightness and elegance were obtained by diminishing the thickness of the shaft and increasing its height. In this respect preference is given to the Ionic column, which was originated by the Asiatic Greeks, who made the shaft equal in height to eight diameters, ornamented the capital, and constructed a substantial and decorative base. A good example of the Ionic style is represented in the Erechtheum, on the Acropolis at Athens.

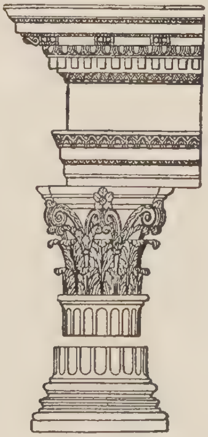
The Greeks originated the Corinthian style, which differs from the Ionic column in that the capital is beautifully ornamented, but it was developed in its higher artistic form by the Romans. The latter added the Tuscan, named from the Etruscans, and the Composite, which is sometimes called the Roman or Italic order. In the Tuscan style the ornamentation is simple, but the Composite column is rich with carving and sculptured decorations. The Romans increased the size of the column as well as the material used in construction and combined with it the arch and the architrave. They not only employed the column in substantial and utilitarian architecture, but utilized it in constructing monuments to commemorate persons and events, such as the Column of Antonine and the Column of Trajan.


IONIC ORDER.


DORIC ORDER.

The early Christian architecture extended the use of the column by employing it in the interiors with the arch in the churches and basilicas. It served both for decoration and in the support of the roof or galleries, the latter being placed above the principal aisles. These columns were similar to the piers or pillars of more modern times, which divide the nave from the aisles in many churches. A second row of columns was frequently introduced to support the roof above the gallery, but these were usually of the lighter Ionic or Corinthian styles, while the lower columns were modeled after the Doric order. The column is not used extensively in modern architecture, neither in constructive work or for decorative purposes.


COMPOSITE ORDER.


CORINTHIAN ORDER.

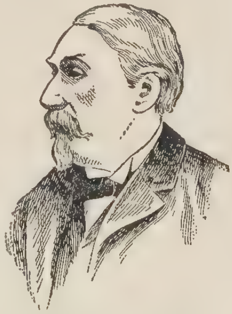
COLVIN (kŏl′vĭn), **Sidney,** historical writer, born in Norwood, England, June 18, 1845. In 1867 he graduated at Trinity College, Cambridge, was elected fellow in 1868, and was chosen professor of fine arts in Cambridge in 1873, which position he held successively for twelve years. He was made keeper of prints and drawings in the British Museum in 1884, and previous to that time was director of the Fitzwilliam Museum, Cambridge. Besides writing for periodicals on the history and criticism of literature, he wrote extensively of the fine arts and contributed to the "Dictionary of National Biography." His published works include "Early History of Engraving in England," "Letters of Keats," "Papers of Fleeming Jenkin," "Selections from the Writings of Walter Savage Landor," and "A Florentine Picture and Chronicle."

COMA (kō′mȧ), a morbid state which is regarded a symptom of apoplexy. It is attended by heavy, unconscious sleep, stupor, lethargy, slow breathing, and fevers of the typhoid type. Coma frequently accompanies Bright's disease, alcoholic intoxication, and opium and morphine poisoning. It is advisable to arouse the patient, if possible, in cases of poisoning.

COMANCHES (kō-măn′chĕz), a tribe of North American Indians, formerly leading a roving life from the regions traversed by the headwaters of the Brazos and the Colorado to those of the Missouri. The French came in contact with them in 1719 and the Spaniards afterward engaged them in fierce wars. They were skilled hunters and warriors. Once a tribe of 12,000, they have been scattered and number about 4,000, the greater portion being located in Oklahoma.

COMB (kōm), a thin piece of horn, metal, shell, or other material with one or both edges made into teeth, suitable for cleaning, dressing, or holding the hair in place. The name is also applied to a fleshy crest on the head of a domestic fowl, especially developed in the male. The typical form is upright and notched, reddish in appearance, and often double or treble.

COMBES, Justin Louis Emile, statesman, born in Roquecourbe, France, in 1835. He was educated in a Catholic seminary and, after studying philosophy, took orders in the church with the view of becoming an ecclesiastical professor. However, he decided to study medicine and, after obtaining a degree, in 1867, he settled to practice at Pons, where he became interested in politics. In 1885 he was elected to the senate, where he showed ability as leader of the democratic party, and in 1893-94 was


M. EMILE COMBES.

vice president of the senate. He was chosen minister of education in 1895 in opposition to the clerical party, in which position he was progressive as an educational reformer, and in 1902 formed a ministry to succeed the cabinet of Waldeck-Rousseau. In this capacity he favored the separation of the church and the state, but resigned in 1905. However, his policy of suppressing religious congregational instruction was supported by the ministry that succeeded to office. He died May 24, 1921.

COMBUSTION (kŏm-bŭs′chŭn), in chemistry, the continuous combination of a substance with certain elements, as oxygen and chlorine, accompanied by light and heat. Generally, combustion is the action or operation of burning. *Spontaneous combustion* is caused by the internal development of heat without the application of fire. It frequently occurs in heaps of slate and refuse coal, in rags, oils, moistened hay and straw, and in other substances closely confined or stored in large quantities. The alleged combustion of the human body caused by the saturation of the internal organs with alcoholic drinks coming in contact with coal or fire is not well authenticated. It is claimed by some writers that in advanced stages of drinking, besides being advanced in life, the internal organs burn with rapidity, after which oily substances and fetid ashes remain. Most chemists believe the combustion of the human body in this way to be impossible.

COMEDY (kŏm′ē-dȳ), that branch of the dramatic art which represents the manners of common life, the object of which is to amuse by presenting the laughable incidents and humorous style. The masterpieces of French tragedy were first called *comedies,* but later the term became confined to the compositions which paint the vices and follies of mankind and describe ridiculous situations. Comedy is opposed to the tragic, serious, or ceremonial form of dramatic art. Among the widely known comedies of modern literature are the following: Goldsmith's "She Stoops to Conquer," Jefferson and Boucicault's "Rip Van Winkle," Lessing's "Minna of Barnhelm," Moliere's "L'Avare," Sheridan's "The Rivals," Sheridan's "The School of Scandal," Shakespeare's "Comedy of Errors," "Shakespeare s "Merchant of Venice," Shakespeare's "Much Ado About Nothing," Shakespeare's "As You Like It," Shakespeare's "Twelfth Night." See **Drama.**

COMENIUS (kō-mā̇′nē-o͞os), **John Amos,** educational reformer, born at Nivnitz, Moravia, March 28, 1592; died Nov. 15, 1671. He was educated at the University of Heidelberg, taught school under the direction of the Bohemian Brethren in Moravia, and afterward became a preacher of this church. In common with the Protestants of Moravia and Bohemia, he suffered many hardships under the government of Austria and sustained great losses through the Thirty Years' War. In 1628 he settled at Lissa, Poland, where he assumed the directorship of the gymnasium. While here he published the great work treating of teaching languages, especially Latin, entitled "The Gate of Tongues Unlocked." This book met with extraordinary success, being translated into a number of European and Asiatic languages.

In 1632 he was elected bishop by a synod of the Bohemian Brethren held at Lissa, and in 1639 received an invitation from England to reform public instruction there. He accepted the offer and went to London in 1641, but was prevented from accomplishing anything by the political troubles in Ireland, and the following year went to Sweden on an invitation of Oxenstiern, the chancellor of the kingdom on educational matters. The Swedish government employed him to compose a work on education, for which purpose he located at Elbing, a town of Prussia, and after four years returned to Sweden, where his work was approved by three commissioners. In 1648 he was elected senior bishop and president of the synod by the Bohemian Brethren, and in 1650 he was invited to Hungary, where he organized a school at Sáros-Pátak. His most celebrated work, entitled "Orbis Sensualium Pictus," was published at Nuremberg, Germany, in 1657, and takes rank as one of the most popular educational productions in the world. It has been variously translated under the title "The World Illustrated" and continues to be used in many countries.

The position of Comenius in the history of education is chiefly that of a reformer. He insisted upon a study of the mother tongue as of greater importance than that of Latin, which was at that time the only means of culture, and declared that a study of languages is a means of knowledge, not an end. Every language is to be learned more through practice than by rule, since rules must be grammatical instead of philosophical. He classified schools in four divisions: the mother school, that is the home; the vernacular or primary school; the Latin school; and the university. The mother school must be in every house, where the child learns the use of language and of the senses. In the sixth year the child may enter the vernacular school and, after completing its course, the mother tongue and the classical languages should be studied in the Latin school. The university should deal with universal study and fit for the particular profession. In every branch of study must be kept in mind the moral and religious side of culture, since learning is a means for the moral elevation of mankind. Children and youth must be taught by precept and example to connect this life with God, and both sexes should receive equal physical and intellectual culture as far as possible. Though equally proficient in speaking and writing the German and Czech languages, he employed the former most extensively.

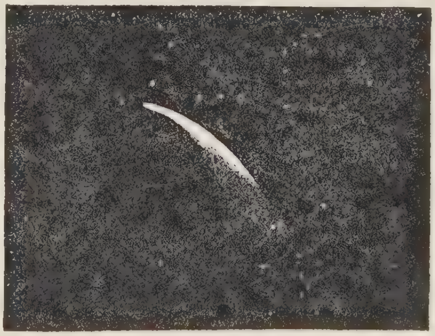
COMET (kŏm′ĕt), a heavenly body so

named from the hairy appearance of its tail. Comets usually consist of three parts—the *nucleus*, the *coma*, and the *tail*. The nucleus is a bright point in the center of the head, the coma is the cloudlike mass surrounding the nucleus, and the tail is a luminous train extending generally in the direction from the sun. Some comets have no tail, others have several, while some have no nucleus. Those belonging to the last mentioned class consist of a fleecy mass known to be comets from their rapid motion in orbits. Comets, unlike planets, are not confined to the limits of the zodiac, but appear in every quarter of the heavens and move in every direction. A comet when first seen presents a faint spot of light on the background of the sky. As it approaches the sun its brightness increases, and the tail begins to become visible. The greatest brightness occurs near perihelion, but gradually fades away as it recedes, and is finally lost even to the telescope.

Comets have excited attention in every age, and until recently have inspired terror in the minds of people who were ignorant of astronomical phenomena. Superstitious fears attended their appearance, and they were looked upon as threatening the world with plague, famine, and war. The Romans looked upon the comet that appeared in 43 B. C., after the assassination of Julius Caesar, as a celestial chariot conveying his soul heavenward. Josephus enumerates among the indications of the destruction of Jerusalem "a star resembling a sword which stood above the city, and a comet that continued a whole year." Aristotle thought comets were not higher than our atmosphere, and that they consist of igneous vapors. Seneca published the opinion that comets are a kind of planets, while Tycho Brahe, in 1577, demonstrated that a certain comet was at a greater distance from the earth than the moon. The concave orbit of a comet was ascertained by Hevelius, in 1668, and the former notion that a straight line represented the path was fully disproved. Sir Isaac Newton in 1704 proved that comets obey the law of gravitation and showed that they move in elliptic orbits. Halley demonstrated in 1682 that comets are periodic in their returns and that their approach may be foretold. He proved that the comet appearing in 1531 returned again in 1607 and again in 1682, and predicted its return in 1759, in 1835, and at regular intervals of seventy-six years. This comet was named *Halley's comet* from the discoverer.

More than 600 comets have been noticed and their appearance and characteristics recorded, but it is thought that no less than 17,500,000 exist in connection with our solar system. Only a small number of this vast aggregation are visible to the naked eye, and a few attract observation on account of their superior size and brilliancy. They move in the solar system and respond to the laws of gravitation. While their orbits differ from those of the planets, they revolve round the sun. The orbit of planets is very nearly circular and they never depart so far from the sun as to be invisible to us, while the paths of the comets are extremely flattened ellipses; hence, they may be observed by us only through a very small part of their paths. Comets that travel in greatly elliptical orbits pass vast distances from the sun, but return within a fixed time. However, some are thought to have a parabolic course and to pass from our solar system. It is probable that they never return.

Some writers think there are three classes of comets—one having an orbit in the form of an ellipse, while the other two pass in paths formed like a hyperbola and a parabola. Those having a highly elliptical orbit sweep very near the sun at perihelion and recede to great distances during their aphelion. Newton estimated that the comet of 1680 was very near the sun and that it had a temperature about 2,000 times that of red-hot iron, while the comet of 1843 was about 30,000 miles from the sun and passed around that body in two hours' time. The comet of 1844 was estimated to have a distance of over 400,000,000,000 miles from the sun at aphelion. Astronomers estimated that the comet of 1680 moved at a rate of 277 miles per second in perihelion, while the velocity in aphelion was only six miles an hour. The density of comets is exceedingly small, so small that stars may be observed through them by means of a telescope. It is thought that the earth passed through the tail of a comet in 1861, its presence being indicated by a peculiar phosphorescent mist. While it is believed that a comet coming in contact with the earth would disturb or destroy the surface at the point of direct contact, it would not dangerously affect the earth's orbit.



DONATI'S COMET.

It is not known whether comets shine by their own or by reflected light, but the latter seems to be the most reasonable, since they become invisible on going away from perihelion. They are thought to decrease in brilliancy at each successive revolution round the sun. At the first appearance no tail is visible and the light is faint. With the increase of velocity, as it approaches the sun, the brilliance increases and the tail shoots out from the coma and becomes longer and of greater splendor each day. The tail of the comet of 1843 increased in length 5,000,000 miles per day. The length of the tail depends upon the size and velocity of the comet. It often reaches a length of 200,000,000 miles. Examination and analysis of the light of comets by the spectroscope have shown that these bodies are composed chiefly of carbon combined with oxygen. Few other elements have been found, but those known to exist in comets include iron, sodium, magnesium, and nitrogen.

Among the remarkable comets is one that appeared in 1811. It had a head whose diameter was 112,000 miles, the nucleus was 400 miles, and the fan-shaped tail stretched out 112,000,000 miles. Its distance at aphelion was estimated at 4,000,000,000 miles, fourteen times that of Neptune, and it is announced to return in thirty centuries. *Halley's comet,* mentioned above, is one of the most remarkable and best known. It appeared in 1910 and has a period of 76.08 years. *Donati's comet* was discovered by Dr. Donati of Florence, June 2, 1858. Its periodic time is about 2,000 years. *Biela's comet* was discovered by W. Biela, a German officer of the Austrian army, on Feb. 28, 1826. The periodic time of this comet is about 138 weeks. It returned in 1832, in 1839, and in 1845. In 1846 it was separated into two comets, which came back together in 1852. Though it has not been observed since, its periodic time has been distinguished by a more or less prominent display of meteors. These displays occurred notably in 1867, in 1872, and several times since. *Encke's comet* was discovered by Johann Encke, director of the observatory at Berlin, Germany, in 1819. It has a periodic time of 1,210 days, and an orbit which is nearer to the sun at all points than that of Jupiter. Encke proved that this comet is identical with the one appearing in 1786, in 1795, and in 1805. D. W. Moorehouse, noted astronomer of Iowa, discovered a new comet in 1908, while at the Yerkes Observatory. It possessed a long, continuous tail.

COMMENCEMENT (kŏm-mĕns′ment), the occasion on which degrees are conferred by colleges and universities upon their graduates. The term is employed in the University of Cambridge, England, and in other institutions of Great Britain to designate the day when masters of art and doctrines received their degrees. In the United States it has reference to the elementary and secondary schools as well as the institutions of higher learning, and the exercises, usually held at the close of the school year, are meant to indicate the commencement of a fuller life after graduation. The alumni of many institutions hold a reunion at the time of the commencement, and usually the literary societies hold annual meetings and the president of the institution receives the report for the past year. Members of the class deliver orations, those of the highest rank being assigned the places of *salutatorian* and *valedictorian,* and frequently an address or oration is delivered by a prominent educator or public man. Commencement exercises may be considered a potent agency in stimulating educational zeal among the students and their friends, and in promoting a spirit of attachment among the graduates to their Alma Mater.

COMMERCE (kŏm′mẽrs), the exchange of goods or property of any kind, especially the exchange on a large scale between states, nations, and colonies. The foreign commerce of the United States, including exports and imports, is exceeded in value only by the commerce of Germany and Great Britain, although the interior commerce of the United States is greater than that of any other country. In fact the collection of raw material from the various portions of the United States at the points of manufacture or export, the distribution of manufactured products, and the distribution of foreign imports give rise to a commerce exceeding in extent the commerce of any other two nations in the world. This vast commerce has resulted largely from the building of extensive railroads, canals, and other avenues of transportation. Incident to it are the construction of factories and the location of vast storehouses. The larger commercial centers are in the cities, where the principal railroads converge and the vast factories and storehouses for distribution are located.

The Phoenicians were the great commercial nation of the ancient world. Their primitive seat was at Sidon and their next center was at Tyre. The prophet Isaiah speaks of Tyre in these words: "The crowning city whose merchants are princes, whose traffickers are the honorable of the earth." This was written about 588 B. C. Their trade was extended to all parts of the world which were known at that time. The Greeks and Romans ranked as commercial nations. In the Middle Ages the Venetians, the Hanseatic towns, and Flanders took the lead in commerce. With the discovery of America the Spaniards, Portuguese, Dutch, and British developed vast commercial interests, though the Hanseatic towns in Germany remained important commercial centers.

Germany and Great Britain formerly had a larger foreign commerce than any other nation of the world. In this respect the two countries were about on the same footing, sometimes one and then the other standing at the head, with the tendency of growth being in favor of Germany. In 1927 the commerce of the countries named was as shown below:

Country	Imports	Exports
Canada	$1,030,892,505	$1,252,158,506
France	2,076,180,000	2,144,550,000
Germany	2,428,210,250	1,641,713,500
Great Britain	6,399,221,985	3,976,822,405
United States	4,227,995,091	4,909,396,342

COMMERCE, Chamber of, a board or association organized by the merchants and traders of a city to protect the interests of commerce. Organizations of this kind are very common in the cities of Canada and the United States, where they are maintained to further the interests of trade and to build up manufacturing and commercial enterprises. Usually they work in harmony with the town or city council, and frequently petition the Legislature for the enactment of laws favorable to the extension of trade relations within the states and provinces, or among the different sections of the nation. These organizations have been united to a large extent in building up a system of international chambers of commerce, which is designed to promote trade within the country and on a larger scale with foreign nations.

COMMERCE AND LABOR, Department of, one of the executive departments of the United States. It was created by an act of Congress on Feb. 11, 1903, and is under the direction of a secretary, who is a member of the Cabinet. The head of this department, like the other cabinet officers, is appointed by the President, subject to confirmation by the Senate, and the salary is $12,000 per year. The duty devolving upon this department, as set forth in an act of Congress, is to foster, promote, and develop the domestic and foreign commerce of the United States, manufacturing, mining, and the fishery industry. It is incumbent upon the department to promote improvement of transportation facilities, supervise the business of insurance, and develop the interests of labor. George Bruce Cortelyou (born 1862) was made the first Commissioner of Commerce and Labor, but he resigned in 1904 and was succeeded by Victor H. Metcalf (born 1853), of California.

The Department of Commerce and Labor includes an effective organization of bureaus. These are the Bureau of Labor, Bureau of Corporations, Bureau of Navigation, Bureau of Manufactures, Bureau of Standards, Bureau of Foreign Commerce, Census Bureau, and Bureau of Statistics of the Treasury Department. With it are affiliated the steamboat inspection service, the lighthouse board, the lighthouse establishment, the immigration service, and the fish commission. The Bureau of Corporations is presided over by a commissioner of corporations. This officer receives a salary of $5,000 per annum, and has partial jurisdiction of the investigation and control of trusts and trade combinations. It is his duty to investigate any corporation of joint-stock companies engaged in commercial pursuits, both domestic and foreign, except common carriers. In 1913 the department was reorganized as the two Cabinet positions of Secretary of Commerce and Secretary of Labor, with William C. Redfield as head of the former and William B. Wilson as head of the latter.

COMMERCIAL LAW, or Mercantile Law, the branch of law which regulates the affairs of trade and commerce. It originated largely from the customs of merchants in the Middle Ages, when the peaceful arts of exchanging commodities began to replace the methods employed by the stronger nations in conquering the less powerful peoples. Though the relations of the citizen to his family and the state may differ widely under climatic and economic conditions, it must be admitted that some satisfactory arrangement for buying and transmitting commodities can be devised among the nations of the world. Besides, each of the nations has a system of commercial law which refers particularly to the domestic trade. It includes the enactments that refer to contracts, promissory notes, bills of exchange, deeds of trust, etc.

COMMISSARY (kŏm′mĭs-sȧ-rȳ), in military, the term applied to the civil officer appointed to inspect the musters' stores and provisions of the army. During the times of war a number of commissaries are appointed, each being charged with some specific department of duty.

COMMISSION (kŏm-mĭsh′ŭn), a document issued by civil authority conferring designated rank, power, or authority on the person or persons therein named. The instrument bearing this title is issued by the government to officers in the navy and army, postmasters, justices of the peace, and other similar officials. Another class of commissions are those granted to a number of persons who are intrusted with the performance of certain duties of a legal or public character.

COMMITTEE (kŏm-mĭt′tē), one or more persons appointed or chosen by a larger number, or by an organized body, to give special attention to some matter or to perform some service. In legislative bodies committees are appointed in special lines of legislation to examine bills of a particular character and to report on the advisability of their passage. The whole body often resolves itself into a committee to consider any bill or matter, in which case the chair is occupied by some member, called the chairman of the committee. The *Committee of Public Safety* was made up of members of the French national convention during the first revolution. In 1792 the national convention abolished the monarchy and proclaimed a republic. The Committee of Public Safety was appointed on April 6, 1793, and had authority to supervise the work of several committees, among whom the executive functions of the government were divided. Later extended powers were vested in this committee and all the executive authority passed into its hands. The communists established a similar committee in March, 1871, but it fell about two months later.

COMMODORE (kŏm′mō-dōr), a naval officer of the United States, ranking next above a captain. A commodore generally has command of a few ships of war when they are detached for any purpose from the rest of the fleet.

COMMON LAW, the law of England which rests for its authority upon usage and universal acceptance, rather than upon any express and positive declaration of a legislative body. Blackstone classified the civil law of England under two divisions, the *statute law* and the *common law,* and defined the latter as a system of laws which consist of general customs and are accepted by particular courts. The common law is overruled by a statute law, but has precedence in cases in which equity is opposed to it. The State courts of the United States as well as the courts of the provinces of Canada rely upon the English common law, which constitutes the basis of the jurisprudence of these countries. However, Louisiana is an exception to this rule, since the laws in that State are based quite largely upon the jurisprudence of France.

COMMONS, the term applied to the common people as distinguished from the nobility. In England the term includes all the people below the peers, comprising the class represented in the lower house of Parliament, the House of Commons. The term is applied in the same way to the Parliament of Canada.

COMMON SCHOOLS, the term usually applied to the public schools below the high school, although the educational system of the cities includes schools of several grades, such as primary, grammar, high, and manual training schools. Those located in the rural district are called district schools, being under the supervision and control of the officers of the school district, and those situated in the wards of a city are sometimes called ward schools. The schools of most countries are not organized and maintained under a national law, but are usually supported and controlled by the states or provinces, or are dependent largely upon local taxation. The courses of study in the common schools cover eight grades, or years, and outline the study in the common branches, which include chiefly reading, writing, spelling, arithmetic, geography, history, physiology, and grammar. In some of the states and provinces a number of other branches are included, such as music, algebra, drawing, botany, and civil government. These are supplemented in the high schools by courses covering four years of more advanced work. See **Education; Schools.**

COMMONWEALTH (kŏm′mŭn-wĕlth), a state in which the government is vested in the people, as in a representative republic. The term was applied to England after the execution of Charles I., Jan. 30, 1649, soon after which Oliver Cromwell became protector. It ended with the restoration to the throne of Charles II., on May 29, 1660.

COMMUNE (kŏm-mūn′), the smallest territorial and administrative division of France and Belgium. It is the unit for local self-government and is regarded a legal body, hence may sue and be sued, contract debts, and buy and sell property. The chief officer, called the *mayor,* is assisted by a deliberative assembly known as the *conseil municipal.* Communes usually embrace several villages, but sometimes coextend with a town or city, or several communes are located within the same city. Those having a population of more than 3,000 are more largely under the direction of the central government, by which the mayor is appointed, while the chief officer in the smaller communes is appointed by the prefect of the department.

COMMUNE OF PARIS, a revolutionary committee organized in Paris in the French revolution of 1789, which soon absorbed the supreme authority in the government. The leading characters included Danton, Marat, and Robespierre. Of this triumvirate Marat was assassinated July 13, 1793, Danton was guillotined on June 5, 1794, and Robespierre met the same fate on July 28, after being captured at the headquarters of the commune at the Hôtel de Ville. The same name was applied to an insurrection in Paris which occurred on March 18, 1871. The organization was formed to carry out the traditions of the old revolutionary commune, and was proclaimed on the 28th. This occurred after a siege by the Germans, when the people gave evidence of much discontent with the government. Among the notable deeds were the burning of the Tuileries and the Hôtel de Ville, the destruction of the Column Vendome, and the defacement of many notable buildings of historic interest. For ten weeks the most bloody and desperate fighting continued, and during the last ten days of May fully 65,000 communists were killed. On May 28, 1871, Paris was taken by storm and the Commune fell, many of the leaders being either executed or transported.

COMMUNISM (kŏm′mū-nĭz'm), the theory of government and social order according to which property is held as a common trust, and the profits derived from all labors are devoted for the general good. This theory involves the abolition of all private property and the transfer of everything possessed by individuals to the state, which is then charged with the task of assigning work to each of the citizens and dividing the profits among them. There are several communistic bodies in the United States. A number of them are religious organizations, such as the Shakers, Altruists, Church Triumphant, Bruederhof, Mennonites, and Separatists. Besides these are societies known as the Amana Community, the Harmonists of Harmony, Pa., and the Oneida Community of New York. A certain form of cummunism was advocated by Robert D. Owen in his publication of "New View of Society" in 1833, in Great Britain. He attempted to found a society on the new plan, without government assistance, on the banks of the Wabash in 1825, but was unsuccessful. The most prominent communistic leaders in France included Saint Simon, Proudhon, and Fourier, who operated as communists; in Russia they are known as nihilists, and in Germany as socialists. The Amana Community, located in Iowa, has been quite successful, but many of the communities have not realized the hopes of their organizers. See **Brook Farm.**

COMMUTE (kŏm-mūt'), to pay in gross less than would be paid for each separate item combined, or accept an easier, lighter, or different kind of payment, obligation, or service instead of one formerly understood. The term is applied in judicial proceedings to an alteration or reduction of a sentence, as the commutation of the death penalty to imprisonment for life.

COMO (kō'mō), a lake in Lombardy, northern Italy, located at the foot of the Alps, and formed mainly by the Adda River, which enters it at the north and flows from it at the southeastern extremity. The lake is about two and one-half miles wide and about thirty-five miles long. Its excellent climate and beautiful scenery have made it the most celebrated pleasure resort in Italy, and caused its shores to be studded with fine villas, vineyards, and gardens. It was once the residence of Queen Caroline. Trout and other valuable fish abound. The lake is visited by large delegations of pleasure seekers.

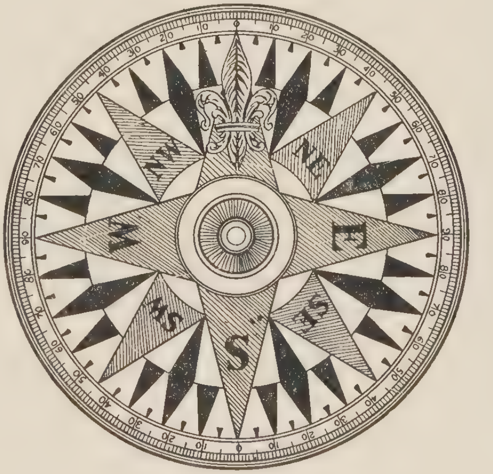
COMO, a city of Italy, in the province of Como, twenty-five miles northwest of Milan, with which it is connected by a railroad. It is situated at the southwestern end of Lake Como and is surrounded by a picturesque country. It has a fine gothic cathedral of the 14th century. Among the chief manufactures are silks, woolen textiles, velvet, cigars, and machinery. It has a brisk trade in merchandise, fruit, and earthenware. The public utilities include a museum, a public library, waterworks, and electric street railways. Como is the birthplace of Volta, Innocent XI., and Pliny the Elder and the Younger. It was anciently known as Comum. Population, 1922, 39,125.

COMORO ISLANDS (kŏm'ō-rō), or **Comores,** a group of volcanic islands in the Mozambique Channel, between Africa and the northern extremity of Madagascar. The islands include Mohilla, Comoro, Johanna, Mayotta, and a number of smaller islets. The total area is 790 square miles. They have a fertile soil, though they are of volcanic origin, and produce fruits, sugar cane, and rice. These islands were ceded to France in 1886 and are governed as a dependency of Réunion. The inhabitants are chiefly of Arabic and Negro descent and profess Mohammedanism. Population, 1922, 75,500.

COMPANY (kŭm'pȧ-nў), in business, a number of persons associated for carrying on any business, or for the performance of any duty. The shareholders divide the profits among themselves in proportion to the amount of capital invested. The term is applied in infantry to the smallest command of a captain. In 1917 the United States increased the full strength of a company to 250 men and six officers.

COMPARISON (kŏm-păr'ĭ-sŭn), the act of setting forth the points of similarity or contrast between one thing or person and another. In grammar comparison is that inflection of adjectives or adverbs which indicates difference in the degree of quality. The three degrees of comparison are *positive, comparative,* and *superlative.* The last two are usually expressed by adding er or est to the positive, or by using more or most, less or least, before it. Great, greater, greatest; truthful, less truthful, least truthful are examples of comparison.

COMPASS (kŭm'pa̤s), an instrument for determining direction by means of a poised magnetic needle. In surveying, such an instrument is used for measuring horizontal angles. It consists of a rotating telescope, mounted above a card showing the cardinal and other points. In electricity, an instrument known as a compass is employed for measuring the intensity of a voltaic current, in which a small needle is placed. The intensity of a current is measured from its proportion to the angle of deflection. This deflection is ascertained by the instrument, after which its corresponding value is obtained from a table of tangents.



MARINER'S COMPASS.

In nautics the *mariner's compass* is used to determine the course of a ship. It is usually inclosed in a box and this is again placed in a larger one, called a *binnacle,* and located in the back part of the vessel. The essential part of the mariner's compass is the magnetized needle. This is fastened to the lower part of the card, which is made of a leaf of mica, an ordinary cardboard, or some similar substance. The arrangements are so constructed that the card revolves with the needle. On it the four *cardinal points,* north, east, south, and west, are marked and some smaller divisions are indicated so as to constitute thirty-two in all, each one having a name compounded from the cardinal points. The compass is supported on gimbals to keep it in a horizontal position, notwithstanding the moving and rocking of the ship. In large iron or steel vessels a notable deviation of the north and south line from the magnetic meridian is ordinarily noticed, which is due to the permanent magnetism of such vessels. To overcome this a permanent steel magnet is placed in the vicinity of the compass, by means of which an opposite attraction to that due to the ship is exerted with equal force. The helmsman carefully observes the movement of the compass when steering the ship so as to move forward in a continuous and proper course.

It is believed that the Chinese were the earliest inventors of the mariner's compass, using it first on land and afterward to guide ships on the sea, but the name of its inventor is not known. It was brought to Europe by Marco Polo, a Venetian traveler, in 1260. The Swedes knew of the compass in 1250, in the time of King Jarl Biger. The variations at different degrees of longitude were first discovered by Columbus in 1492, and rediscovered by Sebastian Cabot in 1540. The hanging compass now used was invented in 1608.

COMPASS PLANT, an annual plant of the Compositae order, native to the prairies of the Mississippi Valley. It was so named from its radical leaves, which are sensitive to the light and in midsummer point quite nearly to the north and south. Asa Gray, the noted botanist, attributed this property to the fact that both surfaces of the leaves are equally affected by the light, hence their edges are turned vertically and their tips assume a north and south position so as to receive an equal amount of illumination on both sides. The stems contain a large per cent. of resinous matter, hence the plant is known locally as *resin weed.*

COMPOSITAE (kŏm-pŏz'ĭ-tē), an order of plants, distinguished by compound or composite flowers. The order is given various designations by writers, such as aster family, composite family, sunflower family, and thistle and chicory families. About 12,000 species of this order have been described, hence it is the largest family of plants that bear flowers. The heads of flowers are composed of a number of florets congregated upon a common receptacle, which is surrounded by bracts in the form of leafy or scaly involucres, giving the appearance of a single flower. In many species the florets are so uniformly arranged that it is common to speak of the aggregation as a flower, instead of referring to the individuals that make up the head as separate and distinct blossoms. However, in some species the florets differ materially in shape, size, and color, and those near the outside are frequently imperfect and sterile. In the typical flower the stamens are five in number and are united together by their anthers, and the ovary has one cell and one ovule. The corolla is above the ovary, and is either tubular or strap-shaped, both forms frequently occurring in the same plant. Many species of this order are cultivated for ornaments, such as the aster, daisy, goldenrod, dahlia, and chrysanthemum. Others are important for their medicinal value and for food, including the sunflower, chicory, tansy, salsify, lettuce, dandelion, chamomile, arnica, wormwood, artichoke, etc.

COMPRESSED AIR (kŏm-prĕst'), the name applied to atmospheric air compressed by means of pumps and utilized to propel machinery by the general force of expansion. It is used for propelling engines constructed quite like steam engines, the force of the expanding air being exerted against a piston in a cylinder. It has been made serviceable in water pumps, in elevators, facing machines, hydraulic presses, motors, railroad engines, brakes, hydropneumatic hoists, for ventilation, and various other purposes. In compressing air sufficiently to force a hundred cubic feet to occupy one cubic foot, it becomes very hot and loses some of its force in cooling. However, it serves a useful purpose in many respects, especially in rock drills, mining machinery, and various other purposes in the industries. The first attempt to utilize compressed air was made in 1700, since which time many improved machines have been invented and its use has been vastly extended. See **Air Compressor.**

COMPROMISE (kŏm'prô-mīz), an agreement entered into between two parties to refer a matter in dispute to arbitration, and to abide by the decision of the arbitrator. In recent years compromises have been the means utilized extensively to settle various disputes between nations, such as the boundary dispute between the United States and Canada and that of Venezuela and British Guiana. See **Ashburton Treaty.**

COMPROMISE OF 1833, a tariff measure passed by the Congress of the United States in 1833, as a compromise for the high tariff act of 1828. The latter had caused intense dissatisfaction in the Southern States, and its strict enforcement brought about the nullification by South Carolina and a threat that the State would secede from the Union. Henry Clay proposed a compromise in the Senate, but the House took up the issue and passed a bill which became a law, though it was practically the same as that introduced by Clay in the Senate. It was designed to reduce the high duties gradually, until after ten years a free trade basis should be reached.

COMPROMISE OF 1850, a name given to a series of measures passed by the Congress of the United States in 1850, designed as a compromise between the antislavery and proslavery parties. Clay's Omnibus Bill was proposed and defeated a short time before and the two were practically identical. The compromise provided that Texas was to receive $10,000,000 for New Mexico; California was admitted into the Union under a free constitution; Utah and New Mexico were organized as territories, with the power to adopt or reject slavery; the Fugitive Slave law was enacted, under which fugitive slaves were returned when their owners made certain affidavits; and redress to free colored seamen imprisoned in Southern ports was prohibited. Henry Clay, Daniel Webster, and John C. Calhoun made celebrated speeches upon the various compromises. The measures thus enacted after much controversy were rendered futile when Stephen A. Douglas introduced his Kansas and Nebraska Bill, in 1854, when the whole controversy was opened anew in Congress and on the plains of Kansas.

COMSTOCK LODE (kŭm′stŏk), an extremely rich metallic vein on the eastern slope of the Virginia Mountains, in the western part of Nevada. In this large and productive vein the Big Bonanza and other mines have produced gold and silver to the value of $350,000,000. It was discovered in 1859. The depth of the mines is about 2,250 feet.

COMTE (kônt), **Isadore Auguste Marie François Xavier,** founder of the positive system of philosophy, born at Montpellier, France, Jan. 19, 1798; died Sept. 5, 1857. He studied at Paris and became well known for his boldness and novelty in speculative philosophy. In 1820 he was employed to draw up a statement of doctrines taught at Saint Simon's school. He commenced a course of lectures on positive philosophy in 1826, but gave only four lectures, owing to a derangement of his mind. However, he soon recovered his faculties and took up his studies and lectures again. He began work on his "Course of Positive Philosophy" in 1830 and completed it twelve years later. It was translated into the English by Harriet Martineau. His views were very original and comprehensive and excited much attention among students and thinkers in Germany, France, and England. According to the philosophy of Comte there are three stages in the development of mankind, the theological, the physical, and the positive. In the first stage man refers all phenomena to some supernatural being, in the second he seeks to demonstrate the existence of some abstract force or essence, and in the third he no longer seeks a cause or essence, but is content to study the phenomena of existence and reduce particular facts to more general facts.

CONCENTRATION (kŏn-sĕn-trā′shŭn), in pedagogy, the connection between the parts of each study and such a spinning of relations and connecting links between different sciences that unity may spring out of the variety of knowledge. Herbart was the first educator to make use of the term, and it is now employed quite generally by the Herbartians. The theory of concentration makes the child's mind the center for concentrating efforts in education, and utilizes the natural tendency of the mind to unify all its ideas, feelings, and incentives. Consequently concentration is concerned chiefly with the relation of different studies to each other.

CONCEPCION (kŏn-sĕp′shŭn), a seaport city of Chile, capital of a province of the same name, on the Biobio River, about seven miles from its mouth. It is a well built city and has a number of public buildings and a cathedral. Many of the streets are paved with stone, lighted by electricity, and traversed by electric railways. Its port is Talcahuano on the Bay of Concepcion, about eight miles distant, and one of the most important in Chile. The city was founded in 1550 by Pedro de Valdivia (1510-1554). It suffered at various times by attacks of the Araucanian Indians and has been damaged frequently by earthquakes. Population, 1922, 61,786.

CONCEPTION (kŏn-sĕp′shŭn), the formation of an idea or image in the mind. It consists of a conscious act of the understanding, bringing an object or impression into the same class with a number of other objects or impressions, by means of some character or characters common to them all. *Perception,* by which individual ideas are acquired through the senses, is the first step in forming ideas or concepts. The power of conception depends largely upon the ability of the mind to separate ideas and classify them according to qualities, and then group them into a class. To cultivate this faculty it is necessary that the mind receive clear and definite ideas of objects and their properties, that they be deeply impressed so they may be permanently retained and readily recalled, and that they be associated according to their intrinsic or logical relations. Conceptions of the highest order can be obtained only by a close and accurate observation of the objects from which they are derived. When training the perception, the instructor is at the same time training the conception, but the latter process is relatively more important than the former. In forming conceptions the mind is greatly influenced by its feeling, and the concepts formed under circumstances causing deep emotion, either of pain or pleasure, remain almost indelibly.

CONCERTINA (kŏn-sẽr-tē′nȧ), a musical instrument in which the sounds are produced by admitting air through metallic reeds, as in the accordion. It was invented by Charles Wheatstone in 1829. The form is hexagonal and at each end is a keyboard, which is worked by the finger while drawing out and pressing the bellows to obtain a pressure of air, which works on the reeds as the keys are pressed. Every sound in the scale is double and can be produced by pulling or pressing the bellows.

CONCH (kŏnk), a name applied to many marine univalve mollusks, especially to the rose-lined *stromb* of Florida and the West Indies. Large quantities of these mollusks are obtained in the Bahama Islands, where they are gathered and exported for cutting shell cameos. The fleshy parts are prized as food by the natives and the Indians use the shells in making white wampum. The *triton* of the East Indies has a large spiral shell that is known as conch, and, like that of the stromb, may be perforated and fitted with a mouthpiece and finger holes and used as a sonorous musical instrument.

CONCHOLOGY (kŏn̲-kŏl′ō̇-jy̆), the science of shells. See **Shells.**

CONCLAVE (kŏn̲′klāv), the apartments where the cardinals of the Roman Catholic Church assemble for the election of the Pope, or the assembly of cardinals convened for that purpose. The cardinals are permitted to appoint the place for the election, but the conclave is usually held in the Vatican or the Quirinal palace at Rome. They assemble on the tenth day after the death of the Pope, the meeting being in a large hall connected with small rooms, two of which are assigned to an ordinary cardinal and three to one of princely rank. The deliberations are held in privacy and all of the members of the conclave are locked in and attended by two or three conclavists or attendants. No communication is allowed with any one on the outside, and the food is carefully inspected so no concealed missive may reach the conclave. The vote is by ballot taken twice a day until it is possible to secure an election, for which a two-thirds vote is necessary.

CONCORD (kŏn̲′kẽrd), a town of Middlesex County, Massachusetts, on the Concord River, and on the Boston and Maine Railroad. It is the seat of the Massachusetts Reformatory, has a public library, and is a market for fruit and produce. The manufactures include harness, clothing, and rubber goods. At the bridge across the river the first shots of the American revolution were fired on April 19, 1775. A monument marks the spot where several British soldiers fell. The Battle of Lexington commenced at Concord, the Americans pursuing the British, who were on a rapid retreat. At that time the population of Concord was 1,300, and it sent 174 men to the army in 1775. The soldiers' pay was raised by the town. Among the persons of literary eminence who made their home at Concord are Alcott, Hawthorne, Emerson, and Thoreau. The town was founded in 1635. Population, 1905, 5,421; in 1920, 6,461; in 1925, 7,056.

CONCORD, the capital of New Hampshire, in Merrimac County, on the Merrimac River, 72 miles northwest of Boston. It is on the Boston and Maine Railroad and several electric interurban lines. The river divides the city into two parts, which are connected by a large number of bridges. The streets are well paved, lighted, and otherwise improved. It has street railways, waterworks, and a sewer system. Among the educational institutions are the high school and the Saint Paul's School. The city has a public library of 36,000 volumes. Among the noteworthy buildings are a State insane asylum, the city hall, two orphanages, a home for the aged, the State prison, and a beautiful State house built of granite. The manufactures include hardware, silverware, woolen and cotton fabrics, cutlery, flour, shoes, and musical instruments. Near it are some of the most valuable granite quarries of the East. It was first settled in 1725, when it was known as Pennock. In 1816 it became the State capital and was incorporated as a city in 1853. Population, 1920, 22,167.

CONCORD, a city in North Carolina, county seat of Cabarrus County, twenty miles northeast of Charlotte, on the Southern Railroad. It has a public library, several county buildings, and a number of educational institutions. The manufactures include cotton goods, ironware, cigars, and machinery. The city has good municipal improvements. It was settled at an early date in the Colonial period and was incorporated in 1793. Population, 1900, 7,910; in 1920, 9,903.

CONCORDANCE (kŏn-kôrd′a̤ns), an index in alphabetical order to the words or topics of a book, especially such an index to the Bible. The first known concordance of the Bible in any language was that prepared by Saint Anthony (1195-1231), who issued such a work in the early part of the 13th century under the title of "Concordantiae Morales in Sacra Biblia." This work is a concordance of the Latin Vulgate. A more elaborate edition was prepared, using Saint Anthony's as a basis, and published in 1244. Since then various concordances have been published in the Greek, English, German, and other languages. The same name is applied to a work designed to facilitate reference to other works, such as were published to Shakespeare in 1790, Milton in 1856, and Tennyson in 1870.

CONCORDAT (kŏn-kôr′dăt), any public act of agreement, as a treaty. The term is applied most frequently in papal history to an agreement between a papal see and a secular power for the settlement and regulation of the ecclesiastical affairs. Among the most prominent concordats are those concluded between Pope Calixtus II. and Emperor Henry V. of Germany, in 1122, which still regulates, to a limited extent, the affairs of the Catholic Church of Germany. A concordat was effected between Pope Leo X. and Francis I. of France in 1516, by which the election of the bishop and of several sees was regulated. The concordat between Pius IX. and Emperor Francis Joseph I. of Austria, in 1855, made provisions whereby the legal powers of the papacy were defined in application to the empire. It was set aside in all the dominions of the Emperor of Austria in 1868. Many other concordats were made with different countries.

CONCRETE (kŏn′krēt), in arithmetic, a term used to designate a number or quantity applied to certain persons or things as opposed to an *abstract* number. Thus, the expressions five men or eight bushels are concrete numbers; five and eight are abstract. In logic, the name concrete is applied to any quality which is considered in connection with the object to which it belongs. Thus, *wisdom,* when spoken of alone, is abstract, but when we speak of a *wise man* the quality is concrete.

CONCRETE, an artificial stone composed of a mixture of gravel or broken stone, sand, and hydraulic cement. The proportions of material depend upon the purpose for which concrete is to be used. In most engineering works one part consists of cement, one to three parts of sand, and four to six parts of gravel, broken stone, pebbles, shells, or some other hard material. The value of concrete in construction work consists in its property of changing from a plastic condition into a hard and rigid stone, due to the fact that the cement paste sets and hardens with age. It is estimated that concrete composed of two parts sand, one part cement, and six parts broken stone at the age of one year has a compressive strength of from one to two tons per square foot.

Within recent years concrete has become exceptionally popular as building material. This is true in all construction work, such as bridges, dams, foundations, and even large dwellings. For the last-mentioned purpose hollow concrete building blocks have come into extensive use. A fine example of the value of concrete is seen in the great sea wall at Galveston, Tex., which is about five miles in length and seventeen feet high, and supplies a safe and efficient protection of the city from overflows of the sea. This sea wall was constructed at an outlay of $3,505,040. Concrete has also come into use in the construction of lighthouses and to reënforce breakwaters. An example of the former is in the lighthouse recently completed at the mouth of the Boug River, flowing into the Black Sea.

Prof. I. O. Baker summarizes the use of concrete in "A Treatise on Masonry Construction," as follows: "Concrete is admirably adapted to a variety of most important uses. For foundations in damp and yielding soils, and for subterranean and submarine masonry, under almost every combination of circumstances likely to be met with in practice, it is superior to brick masonry in strength, hardness, and durability; it is more economical, and in some cases is a safe substitute for the best natural stone, while it is almost always preferable to the poorer varieties. For submarine masonry, concrete possesses the advantage that it can be laid, under certain precautions, without exhausting the water, and without the use of a diving bell or submarine armor. On account of its continuity and impermeability to water, it is an excellent material to form a substratum in soils infested with springs; for sewers and conduits; for basement and sustaining walls; for columns, piers, and abutments; for the pointing and backing of walls faced with brick, rubble, or ashlar work; for pavements in areas, basements, sidewalks, and cellars; for the walls and floors of cisterns, vaults, etc. Groined and vaulted arches, and even entire bridges, dwelling houses, and factories in single monolithic masses, with suitable ornamentation, have been constructed of this material alone."

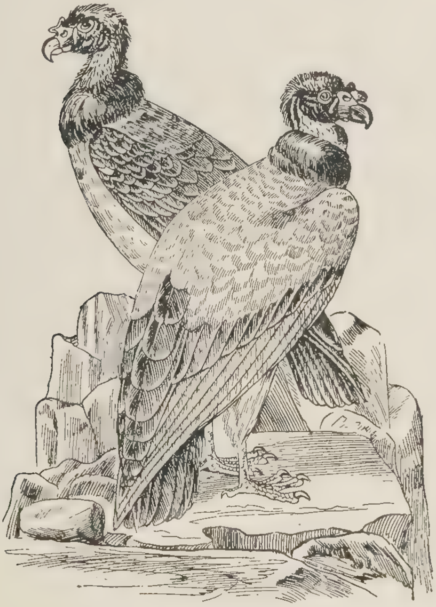
CONDÉ (kon'då), **Louis II. of Bourbon,** called the Great Condé, born Sept. 8, 1621; died at Fontainebleau, Dec. 11, 1686. Being a son of Henry II. of Bourbon (1588-1646), he received a liberal education. He entered upon a military career at an early age, took part in the sieges of Arras and Perpignan, and commanded the French forces against the Netherlands, where he won a noted victory at Rocroy in 1643. He was sent to Alsace in the same year and defeated the Bavarian army under Gen. Mercy near Freiburg, conquering a portion of Germany for France. In 1646 he became the head of his family by the death of his father, and was second to the Duke of Orleans in the state. He captured Dunkirk the same year, his preëminence exciting the envy of Cardinal Mazarin. In 1648 he was intrusted with the command of the army in the Netherlands, when he captured several important points, and was called back to Paris by the War of the Fronde.

In the beginning of his career Condé was in sympathy with the court party in France, but, owing to ill treatment by Mazarin, he put himself on the side of the opposition, which resulted in his imprisonment for one year. After his release he negotiated with Spain, collected troops in the Netherlands, gained the Battle of Bleneau in April, 1652, and marched upon Paris. A fierce but indecisive battle occurred on the streets of Paris, which did not terminate in a satisfactory agreement. When a war broke out between France and Spain, he was made generalissimo in the Spanish army, but was defeated by Turenne. After the conclusion of peace between France and Spain, he was pardoned and reinstated in his former honors. In the War of 1673 he again commanded the French forces in the Netherlands against Spain, and after the death of Turenne was commander in Germany, but later resigned his post. Soon after he retired to his estate of Chantilly, where he became devoted to literature and enjoyed the society of his friends. He was classed as a man of superior intellect, great pride, and strength of character.

CONDENSED MILK (kŏn-dĕnst), an important article of commerce made of cow's or goat's milk. The milk is placed in vacuum pans and evaporated to about one-fourth of its volume. Sugar is added to the amount of about one pound to the quart of condensed milk. The manufacture of this article is enlarging continually. See **Milk.**

CONDIMENT (kŏn'dĭ-mẹnt), any seasoning or sauce used to excite the appetite by communicating a pungent taste to food with which it is mixed. Many condiments assist in digestion, and, by tempting the palate, stimulate the appetite and increase the amount of food consumed. Among the most common are salt, pepper, mustard, nutmegs, vinegar, cloves, horseradish, and pickles. It is necessary to exercise moderation in using condiments, as an over consumption is injurious to digestion.

CONDOR (kŏn'dŏr), the largest vulture of South America, native principally to the Andean regions of Chile, Peru, and Colombia. The favorite haunts of this bird are elevations in the mountains, usually from 4,000 to 16,000 feet, but at times it soars to the tremendous elevation of 21,000 feet above the level of the sea. It floats with outstretched and motionless wings in airy circles. The size is about nine feet measured from wing to wing and four feet from the beak to the end of the tail. Humboldt found none exceeding this measurement, though rare specimens have been found that measure eleven feet from wing to wing, and in one instance a condor was captured which measured as much as fourteen feet. The head and neck are bare, the former being flattened at the top and crowned with a comb on the head of the male. The plumage is usually a deep black with a tinge of gray. The wing coverts in the males are white, and the legs are bluish gray. The powerful talons are large, but quite smooth and blunt.



CONDOR.

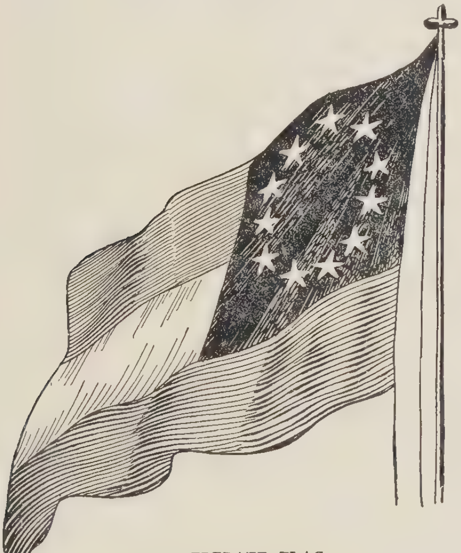
These birds make no nest, but instead lay their eggs on the bare rocks, usually two in number, which are hatched after seven weeks by the warmth of the sun. The young are covered with down of a whitish color, reaching maturity at two years, and accompanying their parents for some time after being able to fly. The mountain heights are their favorite abode, to which they return after descending into the valleys and plains for food. Their food consists of carrion, but in the absence of an abundance they attack sheep, deer, goats, and other small animals. Their mode of attack is to dart against the eyes of their prey and seek to inflict mortal wounds by means of the beak. When opportunity occurs they gorge themselves with carrion and are then easily caught by the Indians and hunters. The *king vulture* is closely allied to the condor and is found in the warmer parts of America. This bird has a reddish plumage above and white beneath, with a bluish-gray ruff and a black tail. It attains to about the size of a goose. The condor and birds of this genus have no voice; the only sound given out is a sort of snorting.

CONE, a solid figure that tapers uniformly from a circular base to a point. It is a *right cone* when the point lies in the perpendicular from the center of the base, other wise it is an *oblique cone.* Cones are similar when their axes and the diameter of their bases are proportional. In botany the cone is a kind of collective fruit shaped like a mathematical cone. The fruit of the Scotch fir is a cone.

CONEMAUGH FLOOD (kōn'ẹ-mạ), the name of a flood occurring in Johnstown, Penn., on May 31, 1889. A dam was located across the South Fork creek, ten miles above Johnstown, a little above its junction with the Conemaugh River, by means of which the water formed an immense reservoir. The artificial lake was stocked with fish, and its vicinity served as a pleasure and resort district for the people, most of whom were residents of Pittsburg. Heavy rain preceding the flood tended to weaken the dam and it broke on the afternoon of May 31, sweeping everything before it. The loss of life was 2,500; fully 99 entire families were lost. This loss was partly by drowning and partly by burning those who had been blocked in by the timbers, which had caught fire from an overturned stove. The villages below the lake had a total population of about 45,000, and more or less damage was done to them by the great water wave passing down the valley.

CONEY ISLAND (kō'nĭ), an island in New York, on the southern shore of Long Island, from which it is separated by a narrow tidal inlet. It is from a few hundred feet to nearly a mile wide and has a length from east to west of about five miles. Formerly it was nothing more than an entire sand waste. In 1874 a line of improvements was begun that transformed the district into a highly valuable region. It is lined with handsome summer hotels and concert and bathing houses, and is crowded with visitors the entire summer season. Manhattan Beach is located at the east end, constituting the portion patronized by the wealthier classes, and is improved by magnificent and expensive hotels and other edifices. Music halls, galleries, and concert pavilions furnish ample accommodation in the way of amusement and entertainment. Several steamboat companies carry passengers at regular intervals and land at tubular iron piers a thousand feet long. The island is joined by several railroad lines to New York City, and elevated and surface railways carry the pleasure seekers to different portions of the island. It was annexed to Brooklyn in 1894 and is now a part of New York City.

CONFEDERATE STATES OF AMERICA (kŏn-fĕd′ẽr-ȧt), the name applied to the union formed in 1861, when eleven states seceded from the United States. The slave question was for many years the cause of extended political and social discussion, and the election of Abraham Lincoln to the Presidency was the immediate occasion for taking steps to dissolve the Union and establish a separate government in the southern portion of the United States. South Carolina seceded first and led in the movement to dissolve the Union. A convention assembled on Dec. 17, 1860, and three days later a resolution was adopted which declared that the Union previously existing between South Carolina and the other states, under the name of the United States of America, was dissolved. Mississippi followed on Jan. 9, 1861, and proposed a convention to form a Southern Confederacy. The convention met at Montgomery, Ala., Feb. 4, with delegates representing six of the seven states that had then seceded. A provisional Constitution was adopted on Feb. 8, with Jefferson Davis, of Mississippi, as provisional President and Alexander H. Stephens, of Georgia, as Vice President.



CONFEDERATE FLAG.

The permanent Constitution adopted on March 11 set forth the doctrine of State sovereignty and recognized slavery, though it forbade the slave trade. It established free trade, allowed members of the Cabinet to speak before Congress, authorized the President to veto single items in appropriation bills, and forbade the issuance of credit bills. The presidential term was fixed at six years, and the President was not to be reëlected. All the seceded states, including South Carolina, Mississippi, Florida, Alabama, Georgia, Louisiana, and Texas, ratified the Constitution through conventions. Besides these seven states, Virginia, North Carolina, Tennessee, and Arkansas seceded and were admitted into the Confederacy. Richmond was made the permanent seat of government and Davis and Stephens were elected President and Vice President under the Constitution and inaugurated on Feb. 22, 1862. Large powers were given to the President and he was authorized to direct the energetic prosecution of the war. Money was obtained by cotton loans, by treasury notes, and by requisition, while necessary supplies were acquired by every available means. The government secured belligerent rights from most maritime nations, but its independence was never recognized. The spirit entered upon in the war and the alacrity with which the southern people responded to the call to arms demonstrated great bravery and determination to prosecute the cause of the Confederacy. However, the Federal government never recognized its existence and treated its representatives sent to Washington as citizens of the United States. The history of the confederation is limited to the period covered by the Civil War, and the causes immediately leading up to it. It ceased to exist with the surrender of the Confederate army on April 9, 1865, at Appomattox, Va.

About fifty years have passed since the issues of the Civil War divided the nation into two great factions, each contending for what was held to be a sacred cause, a principle in human government worthy to be defended by life itself. The feeling of jealousy and mistrust that separated the two sections in sentiment long after the surrender of Gen. Lee has happily given way to a new era of commercial and political fellowship, a period in which all sections are united in the uplift that makes for the greatness and perpetuity of an intelligent nation. Oratory and editorial comment are now tempered with the spirit of the times, and the discussion of past events and future ambitions is that of a people united in every phase of national life. This is reflected in a recent article of Dr. G. R. Glenn, of the North Georgia Agricultural College, in which he says in part:

"The purpose of the Confederate Constitution was not revolutionary. There was in the instrument no encroachment on the rights of any northern State. All that the southern people asked of the United States was to be allowed to secede in peace and set up a government that comported with the aims and ideals of the governed. Conservative men on both sides urged a peaceful separation. Men like Mr. Greeley at the north and Mr. Stephens at the south plead for the preservation of the Union and, if that could not be preserved, then for a friendly separation.

"When the President of the Confederate States called for volunteers men came by the thousands to enlist. As we look back now, when about half a century has passed, their daring and courage seem colossal. Who were these men and for what were they to fight? Nine-tenths of them were poor and did not own a slave and certainly they would not engage in a war for the preservation of slavery. The President of the Confederate States said at the beginning of his government that slaves would cease to be property, and Gen. Lee, the head of the army, freed all of his slaves in 1861. The volunteers were offering themselves to their government to defend a Bill of Rights and a Constitution. They were educated to believe that their State governments were their own, and that any encroachments upon their rights to manage their domestic institutions as they saw proper was a violation of a sacred compact. Slavery was to them only one of the incidents in the quarrel. It may have been the occasion; it was not the cause of the separation.

"The Confederacy died, but the cause for which it lived and struggled did not die. A recent writer says: 'So deeply, though silently, have the minds of the American people been impressed by the magnificent struggle of the Confederate soldiers for the right of local self-government that the hold of that right upon the public conscience has steadily increased in many of the northern states. Over and over again, moreover since the war, has the United States Supreme Court affirmed the limitation of the authority of the general government to the powers distinctly delegated, and the reservation to the states of all undelegated power. The prediction is made that the future historian will say that, while the armies of the North saved the Union from dissolution, the armies of the South saved the rights of the states within the Union.' "

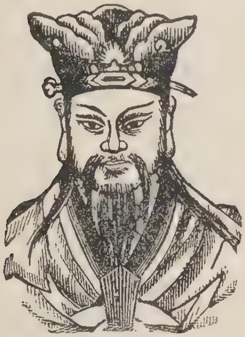
About twenty years ago William D. Kelley, known as "Pig Iron" Kelley, said: "The development of the South means the enrichment of the nation." The truth of this expression must be apparent to all who take time to study the amazing progress of the industries and advancement in values in the southern states. Land in Louisiana that sold at 60 cents per acre in 1895 would command $50 at present; the same proportional increase in values is true in practically all the states south, not alone in land, but also in iron-ore property, coal fields, and other mineral interests. In 1860 the valuation of property in the south was $5,200,000,000, and in 1870 it was only $3,000,000,000, but at present it is $7,500,000,000, an increase of more than a hundred per cent. since the close of the war. The southern states dominate the cotton market of the world, receiving from Europe alone more than $400,000,000 per annum for ginned cotton, or more than $1,000,000 for every day in the year. Rice lands have advanced from $12 to $50 per acre; the rice-growing fields of Louisiana and Mississippi are especially prolific. This is true also of the cultivation of other cereals and tobacco, the rearing of domestic animals, and the output of a large variety of products in the manufacturing industry. The following figures for 1890 and 1920 are of interest in studying the growth of industry in the south:

	1890	1920
Number of cotton mills	119	780
Railroad mileage	42,900	60,250
Phosphate mined, tons	510,299	1,875,480
Bales of cotton used	546,330	2,165,150
Pig iron made, tons	2,600,500	3,250,000
Coke produced, tons	2,534,475	6,245,270
Number spindles in cotton mills	1,712,000	9,205,100
Petroleum, barrels	498,632	42,495,802
Coal, tons	21,250,000	70,185,000
Capital invested in cotton-oil mills	$12,800,000	$ 74,600,000
Capital invested in cotton mills	60,000,000	225,000,000
Lumber products, value	90,700,000	250,000,000
Value of exports	306,000,000	555,480,000
Value of cotton crop	390,000,000	680,000,000
Capital invested in manufacturing	659,000,000	1,500,500,000
Value of farm products	773,000,000	1,750,000,000
Value of manufactured products	917,589,000	1,765,000,000
Property assessed	4,510,925,000	6,500,000,000

CONFEDERATE VETERANS, United, a patriotic organization of veterans of the Confederate States, founded in 1889 at New Orleans, La. The society was established to gather and preserve an impartial history of the Civil War, to cherish and cultivate the friendships formed during the conflict, to commemorate the valorous deeds of the dead, and to give aid and support to the widows and orphans. All surviving soldiers and sailors of the Confederate service are eligible to membership. The local organizations are classified in three departments, those of the Army of Tennessee, of northern Virginia, and of the trans-Mississippi. A button with a square miniature Confederate flag is worn in the lapel of the coat. About 780 local camps with a membership of about 30,000 comprise the society, which holds a general reunion each year.

CONFEDERATE VETERANS, United Sons of, a patriotic organization founded in 1896 at Richmond, Va. All the male descendants of the veterans who have an honorable military record in the Confederate army or navy are eligible in the society, which is organized in the three departments known as those of northern Virginia, of Tennessee, and of the trans-Mississippi. Local camps are maintained in all the southern states and reunions are held annually, both by the locals and by the departments. The membership is about 8,000. The society purchased Beauvoir, the home of Jefferson Davis, in 1902, and converted it into a home for Confederate Veterans.

CONFEDERATION, Articles of. See **Articles of Confederation.**



CONFUCIUS.

CONFUCIUS (kŏn-fū'shĭ-ŭs), Chinese sage, born at Shangping, in the state of Lu, June 19, 551 B. C.; died in 478 B. C. He was the son of a soldier and descended from a good family. His father died when he was three years old, and his mother reared him in comparative poverty. He became inspector of corn markets at the age of seventeen years, married at nineteen, became a teacher at twenty-two, and attained distinction about 517 B. C., when his disciples amounted to thousands. Political commotions caused him to leave Lu, now a considerable part of the province of Shantung, in 516. He became chief magistrate in the town of Chung-tu in the year 500 B. C. His administration was one of wonderful sagacity and he was made superintendent of works, and shortly afterward was elevated to the position of minister of crime in the state of Lu. This place he resigned on account of jealousy manifested by neighboring states, and traveled through several districts teaching and exercising much influence. He returned to Lu in 483 B. C., but refused to hold office, his death occurring five years later.

Confucius compiled five books called Yih-king, Shu-king, Shi-king, Le-king, and Chun-tsien. Four others were compiled by his disciples, known as Ta-heo, or Great Study; Chung-Yung, or Invariable Mean; Tung-Yu, or Philosophical Dialogues, and the Hi-tse. The writings of Confucius are held canonical by the Chinese, and the four books last mentioned are classed as sacred. As a teacher Confucius is distinguished most consistently in ethics. The golden rule has been deduced from his proverbs. When asked what one word would best govern the conduct of all, he replied: "Is not reciprocity such a word? What you do not want done to yourself do not do to others." Laotze, a contemporary of his, born in 601 B. C., enounced the advanced moral precept of returning good for evil. When Confucius was consulted on the subject by one of his disciples, he rejected it by saying: "What then will you return for good? Recompense injury with justice and return good for good."

He esteemed very highly the obedience of children to their parents and veneration on the part of the people in general to their ancestors. His doctrine led to the notion that the kingdom is a great family, which, under all circumstances, owes passive obedience to its sovereign. In general his teaching is viewed as a system of ethics, politics, and religion. He revived and advocated the Chinese faith instituted within the thousand years preceding the 23d century B. C., in which the king was the officiator. It includes the worship of ancestors and parents and prayers to the dead, but makes no explicit claims for the futurity of the departed. The reward for good is expected during life on earth.

Confucianism became popular with dignitaries and emperors. Temples to its founder are maintained in all market towns. His history, appearance, and teachings are known better than those of any other Chinaman, and his influence on the great race has been the most impressive and lasting.

CONGER, Edwin Hurd, diplomatist, born in Knox County, Illinois, March 7, 1843; died May 18, 1907. In 1862 he graduated from Lombard University, Galesburg, Ill., and four years later completed the course in the Albany Law School. He was in active service during three years of the Civil War, accompanied Sherman on the march from Atlanta to the sea, and attained the brevet of major. Subsequently he removed to Iowa, where he practiced law until 1882, when he was elected state treasurer as a Republican. In 1885-90 he was a member of Congress, but resigned in the latter year to serve as minister to Brazil. He was relieved of this position by the Democrat administration in 1895, but was reappointed to the same place in 1897. President McKinley transferred him to the embassy at Pekin, China, in 1898, where he and his family witnessed the siege of the capital by the allied army in 1900. His administration during the Boxer rising met the warm approval of the American people. In 1905 he was made ambassador to Mexico, but resigned after a brief service.

CONGO (kŏṉ'gō), or **Kongo,** a great river of the Southern Hemisphere, in the equatorial regions of Africa. It was discovered in 1484 by Diego Cam and named Pillar River. Shortly after the Portuguese explored a portion of it and named it Zaire, by which it is still known in some countries. The English explored 175 miles of its lower course in 1816. Livingstone discovered a number of its tributaries in 1868, and Stanley explored and published accounts of it in 1876-77. The upper portions widen into Lakes Moero and Bangweolo, from which the waters flow toward the north, then make a bold sweep toward the northwest, thence toward the southwest, and finally enter the Atlantic Ocean. The principal northern tributaries are the Ubangi and Aruwimi; the southern, the Kassai and Lulongo. It is divided into the upper, middle, and lower parts. The upper portion is navigable for more than a thousand miles by steamers, from Stanley Pool to Stanley Falls; the middle extends from the cataract regions to Stanley Pool, about 260 miles; the lower, from its mouth to the cataract region, 110 miles. The total length of the river is about 2,550 miles. It ranks as one of the ten great rivers of the world. The volume of water discharged by it is exceeded only by the Amazon.

CONGO FREE STATE, a colony of Belgium, located in Central Africa, containing an area of 900,000 square miles. Its boundary line is not well defined, but may be stated in general to be formed by French Congo on the northwest, German East Africa on the east, British Central Africa on the south, and by Angola and the Atlantic Ocean on the west. It owes its organization to the discoveries of Stanley, carried on largely under the International Association founded at Brussels in 1876, under the presidency of the King of Belgium. An international conference was held in Berlin in 1885, at which certain rights and privileges, such as free trade and international navigation, were guaranteed to the principal nations. The state was placed under the sovereignty of Leopold II., King of Belgium, who had contributed largely to the exploration and opening of the Congo district. By a treaty made in 1890 the king conveyed his rights to Belgium with the privilege of annexing it in the year 1900. Much dissatisfaction among the inhabitants was reported in 1907, owing to atrocities practiced by the authorities upon the natives.

The Congo region includes the principal part of the basin of the Congo River. It is exceedingly fertile and includes many valuable mineral and agricultural districts. The river system affords no less than 6,000 miles of navigation facilities, while a railroad line has been built from the ocean to Leopoldville, a point immediately above the cataract. Its interior and foreign trade is fast developing under twenty-five commercial companies, representing a capital of about $25,000,000. The principal products and exports consist of caoutchouc, ivory, wax, copra, coffee, cotton, fruits, sugar, and many others of value commercially. The principal minerals include gold, lead, iron, copper, and coal. It has extensive forests, yielding valuable wood, India rubber, palm oil, nuts, and palm kernels. A majority of the trade is with Belgium, Germany, Great Britain, France, and Holland. Manufactures have been developed by means of excellent water power from the numerous falls and cataracts of its rivers, and several important railroad lines have been built. Among the lakes are Moero and Leopold.

The government is administered by the King of Belgium, who is assisted in the affairs of the state by two ministers. A governor general at Boma represents the government in the state. The principal cities are Boma, on the Congo, which is the capital, Leopoldville and Equatorville. The last mentioned is located at the junction of the Bosira and the Congo rivers, under the Equator. Numerous other trading points have been developed from Belgium, under a commission, of which the king is the chief officer. The natives are peaceable and considerably advanced in civilization and industrial arts. They are chiefly of the Bantu race. The European population does not exceed 6,000, of which about two-thirds are Belgians. The total population is estimated at 15,000,000.

CONGREGATIONALISTS (kŏn̲-grē̇-gā′-shŭn-a̤l-ĭsts), a body of Christian churches, most largely organized in England and the United States. The doctrine of these churches does not differ essentially from the other Protestant denominations, but in government they occupy a vastly different field. Each congregation has independent power of self-government, uncontrolled by any bishop, presbytery, or other external ecclesiastical authority. Deacons are subordinate rulers and ministers are recognized, but the congregation itself decides upon its membership and disciplinary power. They believe their form of government to be of divine authority, and to have been that of the apostolic churches. This view is rejected by the Presbyterian, Episcopal and various other churches, most of which claim similar descendency.

Among the first advocates of a system of government similar to modern Congregationalism was Robert Brown, born in the middle of the 16th century. He was a preacher, schoolmaster, and lecturer, and led a party in opposition to the constitution of the Established Church. He set up a congregation in London about the year 1593, when the number of his followers was estimated at about 20,000. Owing to opposition against the leaders, especially on the part of the Established Church of England, he was compelled to remove to Holland, where several churches were organized. The history of this movement is an interesting one and connects Oliver Cromwell and his soldiers with the followers, then called *Dissenters* or *Independents.* After vainly petitioning for religious freedom, they became alienated from Parliament and the Presbyterians. From this time on they grew rapidly in numbers, and now constitute the third English denomination. In the United States they rank as eighth in number. An international council was held in Boston in 1899, the second in the history of the denomination, at which it was decided to establish extensive missions for Cuba and Porto Rico. This denomination has 5,850 ministers, 5,760 churches, and 784,500 members in the United States. Their institutions of learning include thirty, with more than 500 professors, 6,575 students, and an endowment fund aggregating about $10,000,000. In Canada and Newfoundland they have 155 churches and 18,580 members.

CONGRESS (kŏn̲′grĕs), a formal meeting of persons regarded as representatives of a society or country for deliberation and discussion. The term is especially applied in political affairs to assemblies or conferences and to the legislative authorities of many nations. It is the name given to the legislative branch of the government of the United States, and in history is attached to three different bodies. The first was the Colonial Congress, which met in New York on Oct. 7, 1765, and was constituted of delegates from nine colonies. All the colonies except Georgia were represented in a similar congress at Philadelphia July 5, 1774, and declared certain rights. This body became known as the Continental Congress, and adopted the Declaration of Independence on July 4, 1776. The next Congress was the one organized under the Articles of Confederation. It met for the first time on March 2, 1781, and was succeeded by similar assemblies until March 4, 1789, when the Constitution went into effect. The first Congress under the Constitution met in New York in 1789, then the capital. Its meetings were held at Philadelphia from 1789 until 1800, when the capital was moved to Washington.

The Congress of the United States consists of a *Senate* and a *House of Representatives*, in which the legislative authority of the United States is vested, under the supervision of the veto power granted to the President. It has power to lay and collect taxes, duties, imposts, and excises; to borrow money; to regulate commerce; to coin money; to constitute judicial tribunals; to declare war; to provide and maintain a navy; to grant letters of marque and reprisal; to raise and support armies; to provide for the calling forth of military forces; and to admit new states into the Union. Among the provisions common to both houses are the power to judge of the election and qualification of its members, to compel the attendance of members, and to determine the rules of its proceedings. Each may punish and expel members with the consent of two-thirds. A *quorum* of each is constituted of a *majority*, the presence of which is required to transact business. Neither body can adjourn for more than three days without the consent of the other, nor to any other than the usual place of meeting. The salary is $10,000 per annum, payable monthly out of the treasury, and an allowance of twenty cents for each mile traveled by a usual route. The meetings of Congress occur on the first Monday in December of each year, but this time may be changed by law, and the President may convene the Congress in an extra session.

The first Senate consisted of 26 members. It is constituted of 96 members at present. Two senators are chosen by the voters of each state, for a term of six years. The qualifications are: age, thirty years; citizenship, nine years; and inhabitancy in the State in which chosen. The senators are divided into three classes, one-third going out of office every two years. They may be reëlected for an indefinite number of terms. The Senate has concurrent legislative powers with the House, and, besides, has power to confirm appointments made by the President and to consent to treaties. In it is vested the power to elect the Vice President, in case the electoral college fails to make a choice. This occurred only in 1837, when Richard M. Johnson was elected Vice President. It is also a court of impeachment, having power to try those impeached by the House. The Vice President is the presiding officer, besides whom a president pro tem. is chosen by the body.

The House of Representatives is made up of members elected by the voters of the several states, the representation being based upon the population in accordance with the national census taken every ten years. The representation in the first Congress was based on 30,000 inhabitants, the membership consisting of 65. In 1911 Congress fixed the number at 435, an increase of 49 members over the basis of 1910. Each State is entitled to at least one representative. The conditions of eligibility are: age, twenty-five years; citizenship, seven years; and inhabitancy of the State from which they are chosen. The election is held in the even-numbered years, and the term is for two years. Each Territory is represented in the House by a delegate, who may speak on any question, but cannot vote.

Besides having concurrent legislative powers with the Senate, the House has original and exclusive power to originate bills for raising revenues. It has power to impeach officers of the United States, and to elect a President in cases where the electoral college fails to make a choice. This occurred but twice; in 1801, when Jefferson was elected, and in 1825, when John Quincy Adams was chosen. The speaker and the officers of the House are chosen from the members by a general vote. The House more particularly represents the people than does the Senate, while the Senate represents more particularly the states. The former plan of electing the Senators was proposed in deference to the view held, in the early history of this country, that states have certain rights greater than the nation, and which were not relinquished to the nation at the time of forming the Union. The 17th Amendment to the Constitution, which was adopted in 1913, provides for the election of Senators by popular vote of the people.

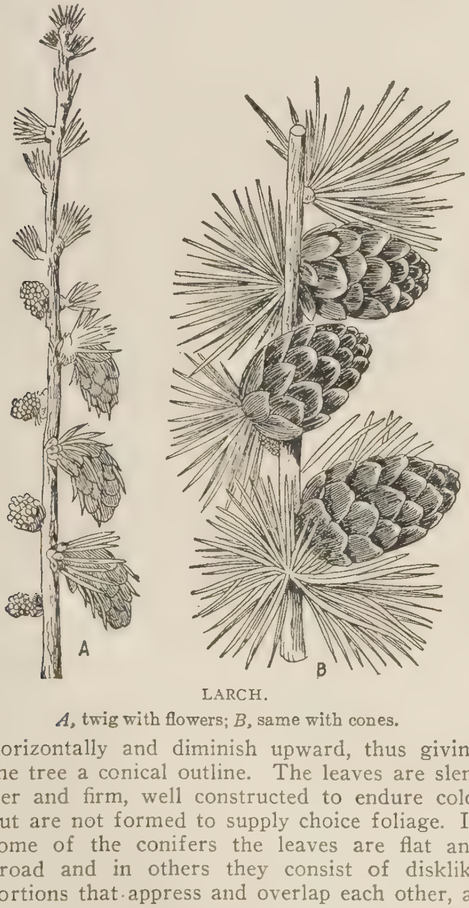
CONGRESSIONAL LIBRARY. See **Library of Congress.**

CONGRESSIONAL RECORD, the printed proceedings of the United States Congress. In the early history of the republic, up to 1799, the Senate held its sessions with closed doors and no journal of its proceedings was published, but since that time the record is printed daily. It cannot be said that the Congressional Record is an authentic publication, since members are permitted to revise their speeches after they appear in type, and they are also permitted to have remarks and speeches inserted that were not delivered in session. From 1789 to 1824 the journal was called the *Annals of Congress;* from 1825 to 1837, the *Register of Debates;* and from 1837 to 1874, the *Congressional Globe.*

CONGREVE (kŏn̲′grēv), **William,** dramatist, born at Bradsey, England, in 1670; died Jan.

19, 1729. He studied at Trinity College, Dublin, and returned to England for the study of law at the Middle Temple, but did not take up the practice. In 1693 he published "The Old Bachelor," which was dramatized and performed successfully at Drury Lane. His writings are characterized by a sustained flow of wit, but are marred somewhat by the eccentricities and loose morality of the author. They include "The Double Dealer," "Love for Love," "The Mourning Bride," and "The Way of the World."

CONIFERAE (kō-nĭf'ĕr-ē), an important order of plants, including the fir, yew, pine, cypress, larch, juniper, etc. Trees of this group are most abundant in the temperate zones and are very sparsely represented in the tropics. Most of the species have a central shaft extending almost to the top, while the branches grow horizontally and diminish upward, thus giving the tree a conical outline. The leaves are slender and firm, well constructed to endure cold, but are not formed to supply choice foliage. In some of the conifers the leaves are flat and broad and in others they consist of disklike portions that appress and overlap each other, as in the arbor vitae.



LARCH.

A, twig with flowers; *B*, same with cones.

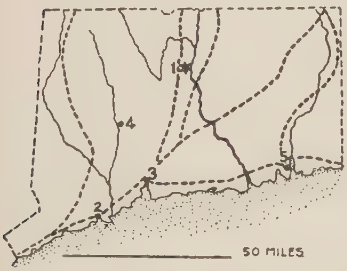
Most species of the Coniferae are *evergreen*, that is they have no regular period of shedding their leaves, which fall from time to time as new growths take their place. To this there are some exceptions, such as the larch, or tamarack, which sheds its leaves annually. The fruit, which in most species is a cone formed of heavy scales, contains a number of seeds. The scales lie firmly against each other until the seeds ripen, when they open and the seed is carried away by the wind. In this class of conifers the seed is fertilized by a yellowish pollen, which becomes effective at the time the seed escapes. Some of the species produce berries, such as the junipers. These and the pines are widely distributed, but the bald cypress and sequoia are greatly restricted. Many fossil conifers occur in good preservation in all the geologic formations from the middle Devonian to the most recent.

CONJUNCTION (kŏn-jŭnk'shŭn), in astronomy, the position of a planet when it is in the same straight line with the earth and the sun. It is said to be *inferior* when between the earth and the sun, and the conjunction is called *superior* when the planet is outside the earth so the latter is the central body, or is beyond the sun so the latter is between the earth and the planet. The three bodies are never in a truly straight line, on account of the inclination of the planes of the several orbits. When several stars or planets are found together they are said to be in *grand conjunction*. These are of course extremely rare, but such a conjunction, according to Chinese history, is said to have occurred about 2430 B. C., in the reign of Tehuen-hiu. A conjunction of the moon, earth, and sun is called an *eclipse*.

CONKLING (kŏnk'lĭng), **Roscoe,** statesman, born in Albany, N. Y., Oct. 30, 1829; died in New York City, April 18, 1888. He was the son of Alfred Conkling, who served in Congress from 1821 to 1823 and was minister to Mexico in 1852. He received an education in an academy, studied law at Utica, and was admitted to the bar in 1849. The following year he became district attorney for Oneida County and was elected mayor of Utica in 1858. He was elected to Congress by the Republicans in the same year, reëlected in 1860, defeated in 1862, but reëlected in 1864 and 1866. In 1867 he was elected to the United States Senate and was reëlected in 1873 and 1879. While in Congress he served on many of the important committees, supported the fourteenth amendment to the Constitution, advocated the prosecution of the Civil War, and attacked the generalship of McClellan. He ranked as a strong opponent to James G. Blaine, and was a leading factor in his defeat for the Presidency in 1884. His name was presented in 1876 as a candidate for President, and ninety-three votes were cast in his favor. He organized the Stalwart faction in opposition to President Hayes, who had adopted a mild policy toward the South, and was hostile toward President Garfield on account of a question of appointment to office. In 1881 he and his associate, Thomas C. Platt, sought to control the Federal appointment in his State, and resigned their seats in the Senate with an appeal to the New York Legislature for a reëlection as a personal vindication. This proved unsuccessful and he resumed the practice of law in New York City. In 1884 he advocated the nomination of Gen. Grant for President and made the nominating speech in the Chicago convention. When President Arthur offered him the nomination of justice of the United States Supreme Court, he declined. His record as a speaker, thinker, and advocate takes high rank among American citizens, and his personal following and friendship has rarely been exceeded.

CONNEAUT (kŏn-nē̇-a̤t′), a town of Ashtabula County, Ohio, in the northeastern corner of the State, on Lake Erie, and on the New York Central, the Nickel Plate, and other railroads. It has steamboat facilities and a considerable trade in coal and farm produce. Near the town, at the mouth of Conneaut Creek, is a lighthouse. The manufactures include brick, canned goods, and machinery. It is one of the oldest towns in Ohio, having been settled in 1796, and was incorporated in 1832. Population, 1900, 7,133; in 1920, 9,343.

CONNECTICUT (kŏn-nĕt′ĭ-kŭt), one of the original thirteen states of the United States, known popularly as the Nutmeg State. It is included between latitudes 40°59′ and 42°3′ north and longitude 71° 47′ and 70°43′ west. The boundary on the north is formed by Massachusetts, east by Rhode Island, south by Long Island Sound, and west by New York. Its greatest length from east to west is about 104 miles and its greatest breadth is 76 miles, with an average width of 57 miles. The total area is 4,990 square miles, which includes a water surface of 145 square miles. It is the third smallest State in the Union, but in population holds twenty-ninth rank.



1, Hartford; 2, Bridgeport; 3, New Haven; 4, Waterbury; 5, New London. Chief railroads shown by dotted lines.

Description. The surface of Connecticut is diversified, but it is not greatly elevated above the sea at any point. In the northern section are the highest elevations, where the highland region extends into the State from Vermont, and the surface slopes gradually toward the south. The Berkshire Hills, which extend from the Green Mountains of Vermont into Massachusetts, traverse the northwestern part of the State. In the eastern part the hills are rounded and fertile and in the northwestern section they are often broken and precipitous, with bold bluffs of trap rock. Bear Mountain, the highest elevation, is 2,355 feet above the sea. Other summits include Girdley Mountain, Prospect Mountain, Riga Mountain, and Ivy Mountain. Level plains extend along the streams, and much of the country adjacent to Long Island Sound is level or characterized by low hills.

The principal river is the Connecticut, which crosses from north to south through the center of the State. Three river systems furnish practically all of the drainage, the Thames and its tributaries in the eastern portion, the Connecticut in the central part, and the Housatonic in the western section, and all of them flow into Long Island Sound. The Pawcatuck forms part of the boundary between Connecticut and Rhode Island, the Shepaug is a tributary of the Housatonic, the Farmington is an affluent of the Connecticut, and the Saugatuck drains the larger part of Fairfield County. Many of the streams flow through formations of solid rock and in the highlands the courses are cut deeply. In most places they furnish valuable water power.

The climate of Connecticut is quite uniform, ranging from a mean temperature of 28° in winter to about 68° in summer. In winter the temperature falls frequently as low as 10° to 15° below zero, while the extreme heat of summer ranges from 90° to 100°. Heavy snows fall among the hills and mountains, where the winters are quite severe and of long duration, but the summers are pleasant and all seasons of the year are healthful. The mean annual rainfall is about 52 inches and the precipitation is quite evenly distributed. In the highlands the soil is thin and in some places barren, but it is of value in growing grasses and fruits. The valleys and the southwestern part have a dark soil of much fertility. Fine forests abound along the Connecticut and other streams, and include pine, hickory, walnut, wild cherry, oak, and maple.

Mining. Iron ore has been mined since 1732, but the output is not important as compared to the production in Missouri and Minnesota. Tungsten ore is mined near Long Hill and deposits of lead, copper, and nickel are known to occur. Granite is the most abundant of the minerals and is quarried extensively for monuments and building purposes. Large quarries of brownstone are worked at Portland and near Middletown. Limestone, clay, and cobalt are obtained in various localities.

Agriculture. Farming is confined largely to the valleys of the rivers, where the soil is mostly fertile, but the hills and highlands are generally broken and stony. Hay is the most extensive crop and is cultivated on an area about three times as large as that utilized in growing all other crops. Tobacco has been an important product since 1640, and is grown chiefly in the valleys of the Connecticut and Housatonic rivers. Vegetables of all kinds thrive abundantly and large interests are devoted to the culture of fruit, especially apples and peaches. All of the cereals can be grown profitably, especially rye, corn, wheat, buckwheat, and oats, but there has been a steady decline on account of more profitable development in other lines, especially dairy and vegetable farming. The dairy products include milk, butter, and cheese, and a ready market is found in New York and other commercial centers of the East. Swine, sheep, and horses are grown, but dairy cows receive the greater share of attention.

MANUFACTURING. Manufacturing is the leading industry, in which about twenty per cent. of the people are engaged. The State ranks twelfth in the output of manufactures. About one-half of the total ammunition made in the United States comes from Connecticut. The State produces forty per cent. of the hardware, fifty-six per cent. of brass manufactures, sixty-three per cent. of the clocks, sixty-four per cent. of the pins and needles, seventy-six per cent. of the plated ware, and a large proportion of the rubber goods and textile fabrics produced in the United States. In the output of its fisheries it takes third rank among the New England states. A large share of the output is shipped fresh to market, but much interest is shown in curing and canning. Oyster fishing is the largest of the fishing industries and next in order are the lobster, cod, and menhaden fisheries.

COMMERCE AND TRANSPORTATION. The export trade of Connecticut is largely through the port of New York City, but foreign imports are entered direct at Hartford, Stonington, Fairfield, New Haven, and New London, all of which are ports of entry. Transportation facilities are furnished by the Connecticut River, which is navigable for large steamers to Hartford, about fifty miles, and river boats ascend to Holyoke by means of the Windsor Locks. Railroad building received attention at an early date, hence few extensions were made within recent years. The lines include a total of 1,050 miles, most of which are controlled by the New York, New Haven and Hartford Company. The State has a large number of finely improved highways and many electric urban and interurban railways are in successful operation. Safe and commodious harbors are furnished by the numerous inlets on the coast.

EDUCATION. The State has long occupied a foremost position in the educational field, and elementary education was provided at public expense from the earliest Colonial period. About five-sixths of all persons of school age attend the public schools, while a nominal compulsory attendance law requires registration in some schools between the ages of four and sixteen. The general supervision and control of the educational interests are intrusted to the State board of education, and local administration is vested in a town committee or a board of education. Support is given jointly by local taxation and by income from the State school fund. Normal schools are located at New Haven, Willimantic, Danbury, and New Britain.

Connecticut has no State university, but is well provided with representative institutions of higher learning. Yale University, one of the leading institutions of higher learning in America, is located at New Haven. Trinity College at Hartford, Wesleyan University at Middletown, and the Hartford Theological Seminary are among the chief educational centers. An agricultural college is located at Mansfield. A hospital for the insane at Middletown, a State prison at Wethersfield, a school for the feeble-minded at Lakeville, training schools for nurses at Hartford and New Haven, an industrial school for girls at Middletown, and an industrial school for boys at Meriden are among the benevolent and reformatory institutions.

GOVERNMENT. The present constitution was adopted in 1818 and has been enlarged by thirty-one amendments. It requires that those who vote must be able to read and write and have resided in the State one year and in the town six months. Executive authority is vested in the governor, lieutenant governor, secretary, treasurer, and comptroller, each elected for two years. A majority vote of each branch of the Legislature is necessary to overcome the veto of the Governor. The Senate consists of thirty-five members and the House of 255 members, both senators and representatives being elected for two years. Regular sessions of the General Assembly, as the Legislature is called, are held biennially, in even years, beginning on the first Tuesday after the first Monday in November. A chief justice and four associate judges constitute the supreme court of errors. Other courts include a superior court of six judges, the courts of common pleas, district courts, and justices of the peace. Local government is administered by the towns and counties.

INHABITANTS. The population of the State has shown a steady and uniform growth the past two decades, owing largely to the increase in the demand for labor in manufacturing enterprises. Nearly sixty per cent. of the people reside in cities of over 8,000 population. Immigration has been chiefly from Ireland, Germany, England, and Canada in the order named. Hartford, the capital, is located on the Connecticut River. The leading cities include Bridgeport, New Haven, Waterbury, New London, Meriden, New Britain, Norwalk, Danbury, Norwich, Stamford, Ansonia, Middletown, Willimantic, Rockville, and Bristol. The total population in 1900 was 908,420; in 1920, 1,380,585.

HISTORY. The history of Connecticut is closely linked with the entire period since the early settlement of America. It was inhabited originally by Indians numbering about 20,000, the most numerous being the Pequots. The first settlement was made by the Dutch near Hartford in 1633. Two years before that date a grant had been given to Lord Say and Sele for a tract of land extending from Narragansett Bay to the Pacific Ocean. However, this grant, though made by the Earl of Warwick, was not considered legal, but the town of Saybrook was founded under it in 1635. In the meantime a number of emigrants from Massachusetts Bay settled at Wethersfield and Hartford, and New Haven was founded by English Puritans in 1638. The Dutch relinquished their possessions in 1650, and New Haven was annexed to Connecticut in 1662. John Winthrop, Jr., had previously obtained a liberal charter from Charles II., who granted absolute autonomy to the colony, but it was demanded by Sir Edmund Andros in 1687 and was secreted until 1689. In 1708 the Congregational Church was established and secular and religious affairs were long closely associated, but all other denominations were tolerated.

Connecticut furnished about 30,000 men for the Continental army in the American Revolution, and was raided a number of times during the conflict. It was the fifth State to ratify the United States Constitution, in 1788, and strongly opposed the War of 1812, when the celebrated Hartford Convention met in its capitol. The present constitution was adopted in 1818, by the terms of which slavery was abolished. The State furnished 56,000 men for the Federal army in the Civil War, and Buckingham, the war Governor, was a prominent figure of that period. Hartford and New Haven were jointly the capitals until 1873, when the former was made the sole seat of government.

CONNECTICUT RIVER, the longest river in New England, rises in northern New Hampshire, forms the boundary between it and Vermont, flows through Massachusetts and Connecticut, and enters Long Island Sound at Saybrook. It is about 375 miles long and drains and area of about 11,250 square miles. Large steamers ascend to Hartford, a distance of fifty miles, and it is navigable to Holyoke for river boats by means of the Windsor Locks. It furnishes an abundance of water power and has a number of falls, including those at Olcott, 36 feet; Bellow's Falls, 55 feet; Turner's, 41 feet, and Holyoke, 59 feet. The White, Passumpsic, Chickopee, Farmington, and Salmon rivers are its principal tributaries. On its banks are many important towns and it carries a large inland trade.

CONNECTIVE TISSUE (kŏn-nĕk'tĭv), one of the elementary tissues of animals, found in nearly all parts of the body. It originates in the middle layer of the embryo, and includes the adipose, areolar, cartilaginous, osseous, retiform, white fibrous, and yellow elastic connective tissues. *Adipose tissue* is most abundant at the kidneys and under the skin, but is found in most parts of the body. It is penetrated by blood vessels, but the fatty parts do not have the termini of nerve fibers. *Areolar tissue* consists of fine fibers which interlace each other, is widely distributed in the body, and sheathes the nerves, glands, and muscles. *Cartilaginous tissue* furnishes the attachments for ligaments and muscles, incloses the larynx and trachea, and joins the bones to each other. *Osseous tissue* is the chief constituent of the bones. *Retiform tissue* is composed of crossing lines and interstices and serves chiefly in the attachments of organs, such as the retiform coat of the eye. *White fibrous tissue* makes up the ligaments around joints, the tendons of muscles, and the sclerotic coat of the eye, and is found in the pericardium and the periosteum. It varies materially in the number of cells and fibers, and in the main consists of parallel bundles which branch as the connections are made. *Yellow elastic tissue* consists of large and coarse fibers and is very elastic. It occurs in the trachea, veins, skin, and vocal cords. *Neuroglia tissue* is the connective tissue of the nervous system.

CONNELLSVILLE (kŏn'nĕlz-vĭl), a borough of Fayette County, Pennsylvania, on the Youghiogheny River, fifty-four miles southeast of Pittsburg. It is on the Pennsylvania and the Baltimore and Ohio railroads. Among the noteworthy buildings are the public library, the high school, and a State hospital. The surrounding country has gas and coal deposits and fertile agricultural lands. The products of its industries include flour, tin, brick, hardware, machinery, and railroad cars. About one-half of the coke made in the United States is produced here. It was first settled by Zachariah Connell in 1770 and became a borough in 1806. It has a good trade and modern improvements. Population, 1900, 7,160; in 1920, 13,804.

CONNERSVILLE (kŏn'nẽrs-vĭl), county seat of Fayette County, Indiana, sixty-five miles northwest of Cincinnati, Ohio, on the White Water River and on the Monon, the Nickel Plate, and other railroads. The chief buildings include the courthouse, the public library, and the high school. It is surrounded by a fertile fruit growing and farming country. The leading industries are machine shops, flouring mills, iron foundries, and planing mills. It has a considerable trade in merchandise. Waterworks, sewerage, and electric lighting are among the public utilities. It was incorporated in 1813. Population, 1900, 6,836; in 1920, 9,001.

CONON, an Athenian general, who lived about 400 B. C. He had command of a fleet of eighteen vessels in 413 and prevented the Corinthians from sending aid to Syracuse, which was then at war with Athens. He was elected general in connection with Alcibiades in 409 and succeeded him three years later. In 394 he commanded the combined fleets of Athens and Persia which defeated the Spartans at Cnidus. Afterward he rebuilt the Long Walls of Athens.

CONSCIENCE (kŏn'shens), the feeling that enables us to distinguish right from wrong in character and conduct, which commends us when we obey and condemns us when we disobey it. A right conscience is the result of wholesome teaching, and is strengthened by wise exercise and use.

CONSCIOUSNESS (kŏn′shŭs-nĕs), the power that the mind has to know its own actions and states. It implies the state of being aware of one's own existence and of one's mental acts and states. Consciousness differs materially in different persons, some possessing much greater powers of consciousness. It is not under the control of the will. We can be conscious only of thinking, willing, and feeling; of acts and states, as remembering, choosing, and perceiving; and the products of these actions—our thoughts, concepts, feelings, etc.

CONSERVATIVES (kŏn-sẽrv′ȧ-tĭvz), a political party of Great Britain. It is nominally the successor of the Tory party, and in leading issues stands opposed to the Liberals. The name was first used about 1832, when a large number of citizens favored the Reform Act of that year, and as compared to the Tories its members were generally classed as more liberal. Balfour and Chamberlain are the chief leaders of the Conservatives in recent years. The leading political parties of Canada are the Liberals and the Conservatives.

CONSERVATORY (kŏn-sẽrv′ȧ-tô-rȳ), an institution organized to give public instruction in and promote the study of music. Conservatories are of ancient origin and were first established in connection with religious societies for the purpose of improving the character of church music. Originally they were charity schools and were recruited by orphans and foundlings of both sexes. Giovanni di Tappia founded the first famous conservatory in Naples, Italy, in 1537. The Paris Conservatory of Music was established in 1784 and takes rank as the most noted institution of the kind in France. Mendelssohn founded the famous Conservatorium at Liepzig in 1842, and it still takes rank as the leading institution of that class in Germany. Five noted conservatories are maintained in England, of which the Royal Academy of Music, founded in 1822 at London, is the most important. Many institutions of this kind are maintained in Canada and the United States. Those of the former country are represented in Montreal and Toronto. The chief conservatories of the United States include the Peabody Institute at Baltimore, the National Conservatory in New York, the New England Conservatory in Boston, and the Cincinnati College of Music.

CONSHOHOCKEN (kŏn-shô-hŏk′ẹn), a borough in Montgomery County, Pennsylvania, on the Schuylkill River, twelve miles northwest of Philadelphia. It is on the Pennsylvania and the Philadelphia and Reading railroads. The chief buildings include the public library and a number of churches and public schools. It has manufactures of cotton goods, flour, ironware, machinery, surgical instruments, and earthenware. Electric lighting and water works are among the improvements. The surrounding country is agricultural. It was founded in 1830 and incorporated in 1852. Population, 1900, 5,762; in 1920, 8,481.

CONSONANT (kŏn′sô-nạnt), a letter of the alphabet which cannot be sounded, or but imperfectly, by itself, and only perfectly in conjunction with a vowel. Consonants are divided into *mutes* and *spirants.* Mutes are sounds in the production of which the breath is stopped or checked, as *b* and *p*. Spirants are produced with a partial stoppage of the breath, as in *v* and *f*. A consonant sound differs from a vowel in that it is produced by an obstruction to the breath, while the vowel sound is produced by a continuous passage of the breath.

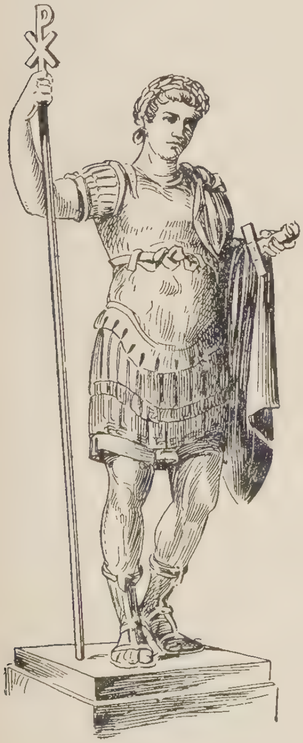
CONSPIRACY (kŏn-spĭr′ȧ-sȳ), in criminal law, a combination of two or more persons, by one concerted action, to accomplish some criminal or unlawful purpose, or to accomplish some purpose, not in itself criminal or unlawful, by criminal or unlawful means. Conspiracies of various kinds are defined and their punishments are fixed by the laws of all nations. The grade of punishment differs according to the nature of the intent on the part of the persons who form the conspiracy.

CONSTABLE (kŭn′stȧ-b'l), **Archibald,** publisher, born in Fifeshire, Scotland, Feb. 24, 1774; died July 21, 1827. He attended the parish school and was apprenticed to a bookseller in Edinburgh, where he became interested in the purchase of rare works. In 1795 he commenced business on his own account as a bookseller. He became proprietor of the *Edinburgh Review,* in 1802, and the same year commenced publishing a large portion of the poems and novels of Sir Walter Scott. About the same time he became owner of the "Encyclopaedia Britannica," which he enlarged by publishing several supplements. In 1826 his firm failed and entailed great loss upon Scott. He published "Memoir of George Heriot."

CONSTABLE, John, landscape painter, born in Suffolkshire, England, June 11, 1776; died April 1, 1837. He studied in the Royal Academy of London, after having made a number of exhibits of landscape paintings. In 1829 he was made a Royal Academician and his productions became recognized on the continent. His famous paintings entitled the "Cornfield," "Valley Farm," and "Barnes Common" are in the National Gallery in London. "The Cottage," "Glebe Farm," and "Weymouth Bay" are in the Louvre in Paris. He published a finely illustrated work entitled "English Landscape Scenery." His "Salisbury from the Meadows" is highly prized. In 1836 he delivered a course of lectures at the Royal Institution.

CONSTANCE (kŏn′stạns), **Lake,** a fine sheet of water located between Germany and Switzerland, about 1,295 feet above the sea. The Rhine flows through it from east to west, a distance of forty-three miles. It is about eight miles wide and 960 feet deep, and covers an area of 208 square miles. It is surrounded by beautiful vineyards, orchards, wooded hills, and picturesque castles. There are fine fisheries of salmon, trout, and shellfish. Railroad lines connect its towns in all directions, while steamboats ply upon its surface. It is remarkable for beauty and much sought as a pleasure and health resort.

CONSTANT (kŏn-stŏn′), **Jean Joseph Benjamin,** painter, born in Paris, France, June 10, 1845; died May 26, 1902. He studied in the Ecole des Beaux Arts, and exhibited his first great productions at the Salon in 1869. He gained a reputation as one of the most popular of recent French painters. His works won many medals and the Legion of Honor, and he was awarded several prizes at the Columbian Exposition in 1893. Among his most famous productions are "Hamlet and the King," "Favorite of the Emir," "Mahomet II.," "Prisoners in Morocco," and "Day After a Victory in the Alhambra." His painting, "Hamlet and the King," was purchased by the French government at a favorable price.


CONSTANTINE I.

CONSTANTINE I. (kŏn′stạn-tīn), **Flavius Valerius Aurelius,** called the Great, born in February, 272 A. D.; died July 22, 337. He was the eldest son of Constantius Chlorus, and distinguished himself when but twenty-two years old as a soldier in the expedition to Egypt and Persia. Constantius and Galerius became emperors in 305 respectively of the West and East. Constantine served in the Eastern Empire under Galerius, but, owing to extensive exposure in the East, he joined his father at Boulogne as the latter was entering upon his expedition against the Picts in North Britain.

Constantine succeeded his father as emperor in 306. Soon after he was opposed by two rivals, Maximian and Maxentius, father and son. The son, owing to a quarrel, forced his father to flee to Rome, who took refuge with Constantine, but afterward he fled from Rome on account of a conspiracy and was captured and executed. Maxentius, greatly angered at the death of his father, collected a vast army and threatened Gaul. Constantine hastened to meet him, crossed the Alps by Mont Cenis, and defeated him three times: In the last engagement Maxentius was drowned in an attempt to escape across the Tiber. Soon after Constantine entered Rome in triumph, adopted a vigorous military policy, and quieted public excitement. He was now sole emperor of the West, and Licinius became emperor of the East about the same time. In 314 the two emperors became engaged in war, which terminated to the advantage of Constantine. Peace was soon concluded, the conditions being the cession of Greece and other territory to Constantine. He next devoted himself to the correction of abuses and public extravagance, strengthened his frontier, effected internal improvements, and established himself as a powerful military influence.

In 323 a war broke out between the West and East, and terminated in Constantine becoming sole ruler of the Roman world. The capital was now moved from Rome to Byzantium, which was solemnly inaugurated as the seat of government in 330 under the name of Constantinople. A dark shadow was thrown over his memory in 324 by the execution of his gallant and accomplished son, Crispus, along with some others on a charge of treason. The council of Nice met in 325 and was supported by Constantine. Subsequently he granted toleration to the Christians and had Christianity adopted as the state religion, at the same time closing pagan temples and forbidding sacrifices. Shortly before his death he professed Christianity and allowed himself to be baptized. He ranks high as an emperor, being beloved by his people and moderate toward other nations. The efficient organization of a stable government and the adoption of Christianity in his vast dominion are the chief events of his life.

CONSTANTINE, Paulovitch, Russian grand duke, born May 8, 1779; died June 27, 1831. He was the second son of Emperor Paul I., who exercised much concern for his military and general education, and he early distinguished himself by activity and ability. He rendered valuable service at Austerlitz in 1805, and subsequently attended his brother, Emperor Alexander, on all his noted campaigns against Napoleon. The government of Poland was intrusted to him by his brother after the congress of Vienna. He resigned his claims to the throne of Russia in January, 1822, and refused to serve when proclaimed emperor in Saint Petersburg in 1825. The throne then fell to his younger brother, Nicholas. When the French Revolution of 1830 broke out, he was obliged to flee for his life, but later returned with the approval of the nation.

CONSTANTINE I., King of Greece. See George I.

CONSTANTINOPLE (kŏn-stăn-tĭ-nō′p'l), called Stamboul by the Turks, the most celebrated city of Turkey in Europe and the capital of the Turkish Empire. It occupies an advantageous site on the Bosporus, having the Golden Horn, an inlet to the Sea of Marmora, on the north, which affords ample anchorage and facilities for innumerable ships.

Constantinople occupies such an important position in warfare, commerce, and trade that its possession is regarded an international advantage. Its occupation is sufficiently potent to disturb the balance of power in Europe. The site is hilly and undulating. It is beautified by numerous mosques, palaces, cypress groves, monuments, gardens, and towers. The beauty of the Thracian Bosporus is almost unrivaled. Among its most noted edifices is the Mosque of Saint Sophia, a fine example of Byzantine architecture, which was converted from a Christian church into a mosque by the Turks. The Mosque of Soliman and the Mosque of the Sultana Valide, built by the mother of Mohammed IV., are imposing structures. The palace or Seraglio of the Sultan occupies the extreme portion of the promontory on which the city is located. It and its surroundings consist of pavilions, beautiful gardens, and parks which occupy a large tract. The principal entrance to the palace is a lofty gate called the Bab Humayum, or *sublime porte,* from which the generally known diplomatic phrase originated. Fully 300 mosques are maintained in the city. Many other Turkish and Eastern edifices are distributed throughout various portions of the city, and it has an Oriental instead of an Occidental appearance.

The commerce of the city is very extensive both by navigation and inland communication. Railroad connections have been made with many of the principal European cities and with portions of Asia through Asia Minor. The trade is largely in the hands of Greeks, Germans, Austrians, Italians, French, and British. The educational interests are greatly inferior to those found farther toward the northwest in Europe, but some degree of elementary education is given, while several higher institutions of learning are under the control of the Porte. An institution for medical research is conducted by Germans, while several other higher institutions disseminate knowledge in law, philosophy, commerce, and industrial arts. Both Turkish and Greek public libraries are maintained, and several periodicals are published in the Turkish and European languages. Many portions of the city have narrow streets, covered with filth, and there are large areas with miserable houses of wood and clay. Among the newer improvements are electric and gas lights, pavements, rapid transit, and a telephone system. The Crimean War and several great fires did much damage to the older portions of the city, which resulted in improvements and buildings on a more modern European style. The language spoken is Turkish, with Greek and other languages in isolated portions. Mohammedanism is the chief religion, but there are several Protestant, Greek Catholic, and Roman Catholic places of worship. The Greek Catholic has the most numerous following of any of the Christian churches in the city. Among the manufactures are tobacco pipes, perfumes, morocco leather, saddlery, fez caps, embroideries, textiles, earthenware, and machinery. Vast forests extend for miles around the city. The suburbs are beautified with numerous cemeteries, many of which have served as burying places for ages.

The city was founded by a colony from Megara about 658 B. C., and was known for years as Byzantium, its ancient name. On account of its commanding position between Europe and Asia Minor, it was the center of Persian, Greek, Roman, and Turkish ambition for centuries. It was occupied by Constantine the Great in 330 A. D., who made it the capital of the Roman Empire, and changed its name to Constantinople, the city of Constantine. The Crusaders occupied it in 1204 and held possession until 1261. The Turks conquered it under Mohammed II. on May 29, 1453, an event marking the extinction of the Byzantine Empire. In 1915 it was the objective point in the eastern campaign of the Triple Entente and their allies, who conducted an unsuccessful offensive to force through the Dardanelles and capture the city. Population, 1923, 1,203,500.

CONSTELLATIONS (kŏn-stĕl-lā′shŭnz), the groups into which astronomers have arranged the fixed stars for convenience in studying magnitude and location. The grouping is not arbitrary, for the reason that the stars may be arranged in as many different groups as inventive imagination may direct. For general convenience the groups are so planned that the several stars occupy points within the limits of an imaginary figure, supposed to be traced on the vault of the heavens. Ancient astronomers agreed upon forty-eight, of which forty-seven are still accepted, the constellation of Antinous being now included in Aquila. At present there are eighty-nine constellations which are generally recognized. Many of the newer groups as classified are located in regions the ancients never beheld. The best known figures include the Great Bear, the Little Bear, the Ram, the Twins, the Great Dog, etc. Eudoxus in 370 B. C. borrowed from Egyptian astronomers the conception of the celestial sphere, brought it to Greece, and first outlined upon it the ecliptic and equator with the more prominent constellations.

The small letters of the Greek alphabet are used to indicate the more prominent stars of the constellations—(α) represents its brightest star,

(β) the next, (γ) the third, etc. The Greek letter is followed by the Latin genitive of the name of the constellation. Thus, (α) Orionis is the most conspicuous star in the constellation of Orion, (γ) Virginis is the third star in the order of brightness in Virgo, etc. Constellations embracing more than twenty-four stars that require especial designation are indicated by the letters of the Latin alphabet and, if these are exhausted, the ordinary Arabic numerals follow. The stars visible to the naked eye are divided into six classes, called *magnitudes,* that of the sixth magnitude being the smallest visible without a telescope on clear, moonless nights. The twenty brightest stars of the firmament are of the first magnitude, and the number increases roughly in geometric proportions.

CONSTITUTION (kŏn-stĭ-tū′shŭn), the organic law of any organized body or association of persons, or the fundamental law of a nation or state. A constitution is the fundamental law of each State of the Union, while the national Constitution is the organic law that binds and holds them all in the national government of the United States. In the states the constitution serves as an engagement between the different portions of society as to the political rights they should enjoy, and the power which they may respectively exercise. Supreme power cannot be wielded successfully by any class of men without abuse. The history of a multitude of emperors, including such as Nero, Caligula, and Tiberius, shows that uncontrolled power may be made a destructive and harmful element. The real power was in the hands of the masses of society during the French Reign of Terror, and gives evidence to what depth unchecked democracy may descend. The tyranny of popedom in the Middle Ages demonstrates that unlimited power cannot be safely intrusted even in sacred hands.

In State organization no class should be allowed full gratification of its desires, its claims should be conceded only with reference to the rights and counterclaims of others. In a government organized on this basis all classes from the lowest to the highest gain real advantage, and liberty is more secure than if the common people, nobility, or crowned sovereigns had full sway. State and national legislation of the United States is vested in the legislative power of the State and national legislatures; the governors and President have executive power, and all these officers are elected for a specified term, and are replaced in office at regular intervals, or may be removed by conviction after impeachment. The judiciary is restrained by prescription and statutes, and interprets and gives meaning to the law. The *habeas corpus* act guards the rights of the people, and they are further protected by the provisions of both the State and national constitutions. The right of trial by jury serves as a bar to malicious prosecution. When necessary, the constitution of the State or nation may be changed by the consent and ratification of the people at regularly appointed elections. The Constitution of the United States at present consists of seven original articles and nineteen articles of amendment, the nineteenth giving nation-wide suffrage to women. It was framed by representatives of the people, who met in convention at Philadelphia, and adopted it on Sept. 17, 1787. It became the fundamental law of the nation on the first Wednesday of March, 1789.

The constitution of the Dominion of Canada went into effect on July 1, 1867, at which time the country consisted of the four provinces of New Brunswick, Nova Scotia, Ontario, and Quebec. However, provisions had been made for the admission at any time as provinces other colonies or territories. Accordingly, Manitoba was admitted in 1870; British Columbia, in 1871; Prince Edward Island, in 1873; and Alberta and Saskatchewan, in 1905. The constitution is similar to that of Great Britain. The executive authority is vested in the British crown and carried on in its name by a governor-general and a privy council. Legislative power is vested in a Parliament of two houses, the Senate and the House of Commons. Each province has a separate legislature and a lieutenant-governor. The right of suffrage varies somewhat in the different provinces and territories.

CONSTITUTION, a celebrated vessel of the United States navy, sometimes called *Old Ironsides* from the hard lumber used in her construction. This vessel was launched Oct. 20, 1797, but was not fully equipped until the following year, when she was put under Capt. Nicholson for service against the French, and in 1799 was the flagship of Commodore Preble in the War with Tripoli. In 1812 she was put under Capt. Hull, who started from Annapolis and ran into a British fleet of five frigates. For three days she avoided an attack by masterly seamanship and escaped after a spirited chase without damage. On Aug. 19, 1812, she encountered the English frigate *Guerriere* under Capt. Dacres off Cape Race, and after a spirited battle of thirty minutes succeeded in wrecking her antagonist. On Dec. 29 of the same year she encountered the *Java,* a British vessel under Capt. Lambert, in the West Indies. Capt. Bainbridge, who had command, fought two hours and forced the *Java* to surrender. In this battle the Americans lost 34 men, while the British lost 100 killed and 200 wounded. On Dec. 30, 1813, the *Constitution,* under Capt. Stewart, sailed toward the West Indies and the following February captured the *Picton* with sixteen guns. In February, 1815, she captured the *Cyane* with thirty-six guns and the *Levant* with sixteen guns, but the latter was afterward retaken by a British squadron and the *Constitution* barely escaped capture. In 1828 the *Constitution* was reported unseaworthy and the navy department concluded to break her up and sell her old timbers, but the execution of the order was arrested by the opposition of public sentiment created largely by the poem of Oliver Wendell Holmes entitled "Old Ironsides." She was partly rebuilt in 1877 and crossed the Atlantic for the last time the following year, and in 1897 was stored at the navy yard in Boston.

CONSTITUTIONAL UNION PARTY, a political organization of the United States. It was organized by the remnants of the Whig party in the South at a convention held in Baltimore on May 9, 1860, at which delegates from twenty states were in attendance. John Bell of Tennessee was nominated for President and Edward Everett of Massachusetts for Vice President. The platform was of a general character, recognizing "no political principle but the Constitution of the country, the union of the states, and the enforcement of laws." In the election it carried Virginia, Kentucky, and Tennessee, but received no support in the northern states. The popular vote cast for its candidates was about 600,000.

CONSTITUTION OF THE UNITED STATES. See **United States, Constitution of.**

CONSUL (kŏn′sŭl), the name originally given to the two supreme magistrates in the Roman Republic. They were placed at the head of the senate by joint efforts of the patricians and plebeians in 509 B. C., after King Tarquinius Superbus had been expelled. They were vested with equal authority and elected annually. As a condition of eligibility the age of forty-five years was required. It was further necessary that a candidate previously passed through the lower offices of quaestor, aedile, and praetor, and that he be in Rome at the time of the election. At first patricians were alone qualified to hold the dignity, but a plebeian was elected in 366 B. C., and in 172 two plebeians were placed in the office. Their power included declaring war, concluding peace, and making alliances, and extended almost to the limits of power granted to preceding kings.

Consul is a term applied to one of three supreme magistrates in France, designated *First, Second,* and *Third* consuls, who held office between 1799 and 1804. Napoleon Bonaparte was the First Consul and soon assumed absolute power, being proclaimed emperor on April 10, 1804. At present the term is applied to an officer of his own country who resides in a specified foreign country, with a view of promoting the commercial interests of the nation he represents. On arriving at the foreign country he shows his credentials to the government, and obtains an *exequatur* sanctioning his appointment, and conveying to him all the rights and privileges of the office. He reports annually or at specified times to his own government the state of commerce in the foreign country so far as it affects the interest of his own country. The office of consul is now recognized by all leading nations. It was first instituted in Italy in the middle of the 12th century, and was made an official position in all European countries by the 16th century. There are generally three ranks: *consul general, consul,* and *vice consul.*

CONSUMPTION (kŏn-sŭmp′shŭn), a wasting disease which affects the vital organs, but which is most common to the lungs. The greatest number of cases occur between the ages of twenty and fifty, and it is more prevalent in women than in men. The remote origin is often hereditary tendency or constitutional predisposition. The complexion of those inheriting the disease is sallow or white, the veins are conspicuous, the circulation is languid, and the strength is small. Tubercles usually first become seated in the apex of one of the lungs, which cause a dry cough and later a difficulty in breathing. A frothylike saliva and blood are often expectorated. The average duration of the disease is twenty-three months, but death frequently results in nine months, and sometimes in three. There are several types, including the *chronic, latent,* and *acute.* Different climates are marked by a fewer or greater number of cases, though it exists in all countries. Florida, Colorado, Alberta, and the Pacific coast are the most favorable regions for persons afflicted with the disease. Dr. Koch, the great German authority, in 1880 announced the doctrine that tubercles are masses of bacilli which destroy the parts affected. He attained success by inoculating the patients with lymph containing specific morbific matter. Other remedies are the inhalation of dry hot air and balsams, and a change of climate. The best preventive is proper sanitation. In crowded workshops the disease is often spread by expectorations. The sputa on the floor dries and rises in the form of dust. This breathed into the lungs causes the bacilli to settle into the tubes and infect the individual. To prevent this, the spittoons should contain water and be emptied daily into sewers flushed by water.

CONSUMPTION, in economics, the use or expenditure of wealth. In general all commodities are destroyed in entering into new forms of wealth. It is in this way that wealth is increased by means of adding to the value of things existing, and by destroying forms of wealth that they may be reproduced as commodities of greater value. Consumption is characterized as *voluntary* or *involuntary.* The former implies destruction in one form for the purpose of producing another, or for the purpose of immediate gratification; while the latter implies the natural wear and tear, such as rusting of iron or wearing fabrics or metals away by friction. Consumption, from the standpoint of utility, is defined as *productive* and *unproductive.* Productive consumption is the kind that produces commodities of higher value or commodities of greater utility, while unproductive consumption is the form which is attended by loss and disappointment. The subject of consumption in economics is one of personal and political interest to every citizen. Upon the care exercised in commerce or in managing the products of labor and industry depends largely the fundamental success of the individual and the state.

CONTEMPT (kŭn-tĕmt′), in law, a disregard of the authority of a court or legislative assembly. It may be either *direct,* as by refusal to obey an order of the court, or *constructive,* as when officers of a court are guilty of any corrupt conduct, abuse of process, or culpable neglect of duty. The offending party is liable to punishment for contempt by summary order, without the ordinary form of criminal proceedings, as indictment and trial by jury. The punishment for contempts may be a fine or imprisonment, or both, but, if the contempt consists in the omission to perform an act which is yet in the power of the person to perform, he may be imprisoned until he performs it. All judgments and orders of courts are enforced in this way, except such as are for the payment of money or the delivery of property.

CONTINENTAL SYSTEM (kŏn-tĭ-nĕn′-tạl), the blockade of Great Britain ordered by Napoleon on Nov. 21, 1806, by the decree of Berlin. The object was to exclude England from all intercourse with the continent, hence the ports of France and its allied states were ordered closed against all vessels coming from England or her colonies, and it was directed that all commerce and correspondence from English ports wherever found be seized. The English government retaliated by prohibiting trade with France and declaring all harbors of that country and her allies in a state of blockade. Napoleon immediately issued new decrees from Milan, Trianon, and Fontainebleau, in which Denmark, Russia, and Austria were forced to join France against England and all ports of Europe were closed against English vessels, except those of Spain, Sicily, Sardinia, and Sweden. These decrees caused English goods to be smuggled to a vast extent, but British commerce lost heavily until 1812, when Napoleon declared war against Russia chiefly because her ports had been opened to English commerce, and his fall in 1814 was followed by a reopening of all the ports. The Orders in Council issued by England against Napoleon were similar to those enforced against the United States in 1812, and which were largely responsible for the War of 1812.

CONTRABAND (kŏn′trȧ-bănd), a term applied in commerce to all goods and commodities exported from or imported into any country contrary to law. Commodities imported in opposition or defiance of either of the two nations engaged in war are regarded contrabands of war, and their transportation by neutrals may be prohibited by one of the belligerents. Gen. Butler regarded Negro slaves contrabands of war for the reason that the Negro was an element of strength to the Confederates and aided them in producing munitions of war or rendering assistance in active service.

CONTRACT (kŏn′trăkt), in law, a bargain or agreement between two or more persons, who bind themselves to do or not to do a particular thing. A contract may be *verbal* or *written,* but in some cases, such as the sale of land or the transfer of title in personal property without a change of possession, the agreement must be in writing and acknowledged before a notary public or some similar officer. Usually contracts are made in express terms, but they may be implied from circumstances or the acts of the parties who are mutually interested.

Contracts made in relation to matters forbidden by law, such as gambling and fighting, are illegal. This is true likewise of contracts whose terms are contrary to public policy, such as restrain trade or limit the rights of a citizen. Contracts that imply or relate to bribery, immorality, and the obstruction of justice are illegal because they pervert the acts of government. A *voidable* contract is one made under duress or misrepresentation, and, though not necessarily illegal, may be set aside. An agreement not enforceable by law is said to be *void.* A contract which ceases to be enforceable by law becomes void when it ceases to be enforceable.

The contract is the foundation of all the business transactions. The common law and the constitution of most governments forbid the passage of laws which act to impair the obligation created by a valid contract, and such laws would be universally condemned as a violation of the fundamental principles of civilized society. Almost an indefinite variety of contracts arise in the affairs of business. However, all depend for their validity upon the capacity of the parties to the contract and upon the fact whether or not the agreement is based upon a sufficient consideration. Those who do not possess the capacity to contract include idiots and lunatics, persons of weak mind, intoxicated persons, minors, and habitual drunkards who are under guardianship. Formerly a married woman could not bind herself in a contract, but in most states she is given an equal standing with the husband. Corporations have capacity to contract only in relation to the objects for which they were formed. Whether or not a proper consideration is the basis of a contract is a subject for question by a court. Considerations are of three kinds, that is, good, moral, and valuable. An agreement to give or do something in the future, if no payment is made, may be regarded a good consideration, but it does not bind the party who promises and therefore cannot be enforced. However, a transfer based upon the love and affection of a near relative is a valid agreement. A valuable consideration implies that money has been paid for a commodity that is a benefit to the payee.

CONTRACTION (kŏn-trăk'shŭn). See **Abbreviation.**

CONVICT LABOR (kŏn'vĭkt), the system of employing prisoners at penal and reformatory institutions. The primary object in giving employment to prisoners is charitable rather than profitable financially, since those confined to prisons usually prefer to work and are personally benefited by the exercise. Many writers regard idleness in prison life a much more severe punishment than the simple fact of being deprived of personal liberty. Three general schemes to employ prisoners are in vogue, those known as the contract, lease, and public account systems. In the *contract system* it is customary for the state to furnish the tools and materials with the prisoners, who are supervised by a contractor. Usually the contractor divides the proceeds from the sale of commodities manufactured with the state, or the contractor furnishes all of the tools and material to be used under the supervision of the state, receiving an equitable share of the product. In the system of *leasing* prisoners the state turns them over to a contractor, who furnishes ample security for their care and employment, and all of the products are the property of the contractor, who is required to pay a reasonable amount for the privilege of the lease. The *account system* implies that all of the work is to be done by the prisoners under the direct supervision of the state.

The employment of convict labor varies greatly in different sections. In many places the convicts are employed on public enterprises, such as road making and the construction of drains and canals. However, it is more common to have them do work within the prison, such as bookkeeping for the institution, laundry work, baking, and other lines necessarily connected with the prison itself. Additional lines of work include the manufacture of buttons, pottery, brooms, clothing, boots and shoes, and garden and field utensils. Some states work their convicts in stone quarries and coal mines. Labor unions have usually declared against the employment of convict labor in lines where it comes in direct competition with free labor, since the tendency is to lower the wage scale. This circumstance and the fact that financial success should not be placed above prison discipline are the most potent arguments against the employment of convicts in lines that compete with free laborers in the market.

CONWAY (kŏn'wā), **Moncure Daniel,** clergyman and author, born in Stafford County, Va., Mar. 17, 1832. He graduated at Dickinson College and Harvard Divinity School, and in 1850 was admitted to the Methodist ministry. Subsequently he became a Unitarian minister in Washington, D. C., and in 1861 had a similar charge in Cincinnati. He lectured in England and was minister at South Place Chapel, London, from 1863 to 1884. Near the close of the last century he returned to America and took up his residence in New York City. His writings include "The Wandering Jew," "The Rejected Stone," "Idols and Ideals," "The Golden Hour," "Pine and Palm," and "Life of Thomas Paine."

CONWELL, Russell Herman, author, born in Worthington, Mass., Feb. 15, 1842; died Dec. 6, 1925. He was a Union soldier in the Civil War, from 1862 until 1865, was foreign correspondent for the New York *Tribune* and Boston *Traveler* a number of years, and in 1879 was ordained to the ministry of the Baptist Church. He held important charges in Philadelphia, founded Temple College, and established the Samaritan Hospital, Philadelphia. His writings include "Life of President Hayes," "Why the Chinese Emigrate," "Life of Bayard Taylor," "Acres of Diamonds," "Woman and the Law," and "Lives of the Presidents."

COOK, Frederick Albert, physician and explorer, born at Callicoon, N. Y., in 1865. He descended from German parents, graduated at the New York University, and served as surgeon of the Peary Arctic expedition from 1891 to 1892. He was surgeon of the Belgian Antarctic expedition from 1897 to 1899. In 1906 he made the first ascent of Mount McKinley. He sailed in the *J. R. Bradley,* in 1907, on an expedition to the Arctic and claimed he discovered the North Pole, on April 21, 1908. Degrees were conferred upon him by the University of Copenhagen and other institutions. He published exhaustive accounts of his explorations, including "Through the First Antarctic Night." See **Polar Expeditions.**

COOK, James, Captain, noted British sailor, born in Yorkshire, England, Oct. 27, 1728; slain in Hawaii, Feb. 14, 1779. He was the son of a farm laborer and entered the royal navy in 1755, in which he rose to the rank of master He surveyed the coasts of Newfoundland and Labrador. Later he was placed in command of an expedition to the Pacific Ocean to make an observation of the transit of Venus over the sun, and set sail Aug. 26, 1768, with the *Endeavor.* On returning he sailed around New Zealand, prepared a map of its coasts, and explored the coast of Australia. He made a second voyage in 1772 to explore the Southern Pacific, returning to England in 1774. He made a third voyage in 1776, when he discovered the Sandwich Islands, explored the western coast of North America, and endeavored to ascertain a northwest passage. While on the island of Hawaii he fell into the hands of savages and was killed. His widow was granted a pension of $1,000 and each of his children a pension of $125. The Royal Society honored his name by having a gold medal struck in his commemoration.

COOK, Joseph, lecturer and author, born at Ticonderoga, N. Y., Jan. 26, 1838; died June 25, 1901. He graduated at Harvard University in 1865, studied at Andover Theological Seminary, and began to preach in the Congregational churches. In 1871 he went to Germany and studied two years, and on his return to America lectured and preached with eminent success. He made a lecturing tour of the world in 1880, returned to Boston in 1883, and soon after founded *Our Day*, a religious monthly. He published "Boston Monday Lectures," a work in eleven volumes, containing lectures delivered by him from time to time in Boston. Other works include "New Defenses of the Lord's Day" and "The Higher Levels of Arbitration."

COOKE (kook), **Jay,** banker and financier, born in Sandusky, Ohio, Aug. 10, 1821; died Feb. 16, 1905. His father was a lawyer and congressman from Ohio, who gave him a good education by private instruction, and in 1838 he became associated with a banking house in Philadelphia. He joined the firm of E. W. Clark & Co. as a partner in 1842, but retired in 1858 to engage in negotiating bonds and financing railroad companies. In 1861 he established the banking house of Jay Cooke & Co., in Philadelphia, and was the principal financial agent of the Federal government at the time of the war, during which period he negotiated government loans amounting to over $2,000,000,000. The national banking system was advocated and supported by him. In the panic of 1873 his banking house failed, owing to large loans having been made on bonds issued by the Northern Pacific Railroad Company, but the firm eventually paid both principal and interest and successfully resumed business.

COOKE, John Esten, soldier and novelist, born in Winchester, Va., Nov. 3, 1830; died Sept. 7, 1886. He was educated for the bar at Richmond, but soon abandoned it for literature. In the Civil War he served on the staff of Gen. Lee, being in nearly all the battles of Virginia and at Lee's surrender, when he held the office of inspector general of the artillery. After the war he produced a number of interesting historical and other writings. Among his best known are "Leather Stocking and Silk," "The Youth of Jefferson," "Life of Stonewall Jackson," "History of the People of Virginia," "Life of Robert E. Lee," and "My Lady Pocahontas."

COOKERY (kook'ĕr-ȳ), the art of preparing food by dressing, compounding, and the application of heat. It originated from the necessities of mankind, since the stomach is too small to contain sufficient vegetable matter to replace the daily waste of the system, hence it is required that foods be prepared and concentrated. Food is rendered more palatable and more easily digestible by cooking, since it loosens the fibers and solidifies the fibrin and connective tissues of meats. It develops the flavor and lessens cohesion, thus improving both the vegetable and animal foods. The art of cooking is as old as the human race, but cooking schools are comparatively of a recent date. Schools of this kind were first established in Europe, where they were introduced as an addition to boarding schools. In America, both in Canada and the United States, many private cooking schools are maintained, and in some of the cities cookery is made a branch of study in the public schools. These institutions study the theory of nutrition and the comparative values of foods, as well as to teach the practical application of methods in cookery. They aid to instill habits of economy in preparing the food for table use, and at the same time promote interest in the scientific preparation of healthful foods.

Foods are usually divided into meats and vegetables, and with the former are included fish and eggs. To prepare meats for table use, they are either baked, boiled, braised, broiled, fried, or roasted. The albumen on the outside of meats coagulates as soon as it comes in contact with heat, hence the best soups are made by placing the meat in slightly warmed water and letting it boil slowly, so the nutritious elements will pass largely into the soup, while meat intended for table use without soup should be placed in very hot water or in an oven highly heated so the nutritious parts will remain largely within it. Vegetables are prepared for the table chiefly by baking, boiling, steaming, or frying, though many varieties are eaten in a raw state. Cookery includes the baking of bread and other foods prepared from ground cereals. All foods should be slightly seasoned at the time of preparation, and additional seasoning may be added at the time of service by each of the guests to suit the taste. When foods are not properly cooked, either too much or too little, they are less pleasurable and possess a smaller degree of nutritive qualities. See **Bread.**

COOK INLET, a bay of Alaska, extending inland about 200 miles from Shelikof Strait. Near its entrance is the northern extremity of the Alaska Peninsula, which is separated by it from the Kenai Peninsula. In the vicinity are lofty mountains and highlands, some of which are characterized by glaciers. Navigation is more or less dangerous on account of severe storms and high tides that sweep up the bay from the Pacific Ocean. Cook Inlet is so named from Capt. Cook, who explored it in 1778, thinking it a passage to the Arctic Ocean. It receives the inflow from the Sushitna and several other rivers.

COOK ISLANDS, an archipelago in the Pacific, located northeast of New Zealand and southwest of the Society Islands. They consist of six larger and a number of smaller islands and reefs, and the total area is 142 square miles. The largest island, Raratonga, has an area of thirty-one square miles. Coffee, copra, and fruits are the chief products. These islands were annexed for administrative purposes to New Zealand in 1900. They were named after

Capt. Cook, who discovered the group in 1773. Population, 1922, 8,450.

COOK STRAIT, a channel of New Zealand, which is separated by it into the two parts known as North Island and South Island. It was discovered by Capt. Cook in 1770.

COOLEY (kōō'lĭ), **Thomas McIntyre,** jurist, born in Attica, N. Y., Jan. 6, 1824; died at Ann Arbor, Mich., Sept. 12, 1898.

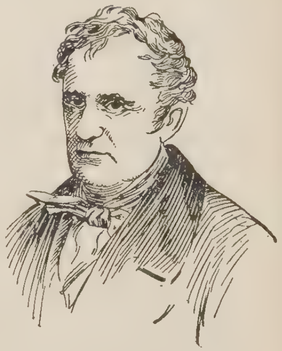
COOLIDGE, Calvin, twenty-ninth President of the United States, born at Plymouth, Vermont, July 4, 1872. Both his father, John C. Coolidge, and his mother Victoria J. (Moor), came from New England stock, who were interested chiefly in farming. The son spent his early years on a farm, attended the common schools, and studied at Amherst, Tufts, and Williams colleges. Besides holding documentary evidences of scholarship in these institutions, he received degrees from Bates and Wesleyan colleges and the University of Vermont. He studied law with Hammond and Field at Northampton, Mass., where he began to practice in 1897. On Oct. 4, 1905, he married Grace A. Goodhue, and is the father of two sons.

It is said of President Coolidge that he ran for office eighteen times as a successful candidate. He was councilman in 1892, city solicitor in 1900-1, city clerk in 1904, member of the general court in 1907-8, mayor in 1910-11, State Senator in 1912-15, Lieutenant-Governor in 1916-18, and chosen Governor of Massachusetts in 1919 and 1920. As Governor he won the approval of the American people by clear decisions and firmness in exercising executive ability. In 1920, when the city police of Boston combined for an organized strike, he maintained the cause of the people against groups massing to prevent public intercourse, holding that such mass action endangers public welfare. In the Republican national convention he was supported for President by a large body of delegates, and when Harding won on the tenth ballot, the nomination for Vice-President was given unanimously to Coolidge. He is often spoken of as the "Silent Man," because of being singularly considerate and reserved. He entered upon the Presidency Aug. 2, 1923, immediately after the death of President Harding at San Francisco. In 1924 he was elected president to succeed himself,—with Charles Gates Dawes as the candidate for Vice-President. He declined to be a candidate in 1928 and, instead, supported Herbert C. Hoover.

COOMBS (kōōmz), **Leslie,** soldier, born near Boonesboro, Ky., Nov. 28, 1793; died Aug. 21, 1881. In 1836 he organized a regiment to aid Texas in the contest with Mexico.

COOPER (kōō'pẽr), **Sir Astley Paston,** surgeon, born at Norfolk, England, Aug. 23, 1768; died Feb. 12, 1841. His great work, "Dislocations and Fractures," appeared in 1822.

COOPER, James Fenimore, novelist, born in Burlington, N. J., Sept. 15, 1789; died Sept. 14, 1851. In 1811 he married the accomplished daughter of John Peter De Lancey, who was a Tory, and it is thought that this circumstance caused him to resign from the navy on the eve of the War of 1812. For a number of years he lived at Cooperstown, N. Y., where he devoted himself to farming. His first novel, "Precaution," appeared in 1821, but it did not prove a success. The same year he published "The Spy," which secured for him a place in the first rank of novelists. Subsequently he traveled in Europe, and served as consul for the United States at Lyons for three years. He was a restless, busy writer and produced a large number of excellent productions, many of which have been translated into most modern languages. In his writings he created the characters of Harvey Birch, Natty Bumppo, and Long Tom Coffin, which have been widely commented on as features in American literature. He began the writings known as the Leather Stocking Series in 1823, of which "The Pioneers" was the first to be published. Among the best known, besides those named above, are "The Red Rover," "The Pilot," "The Prairie," "The Waterwitch," "The Pathfinder," "The Deerslayer," and "The Last of the Mohicans."


J. FENIMORE COOPER.

COOPER, Peter, philanthropist, born in New York City, Feb. 12, 1791; died April 4, 1883. He was the grandson of John Campbell, a skilled potter of New York, who held the office of deputy quartermaster in the Revolutionary army. His father served in the Revolution and was by trade a hat maker. Later he located at Peekskill, where he worked at hat making and brick making, opened a country store, and brewed ale. Peter assisted his father in these occupations for a time. In 1808 he was apprenticed to a carriage maker, and while with him invented a machine for mortising hubs of carriages that proved of much value. Later he attempted the grocery business, cabinet making, and the manufacture of glue. In addition to these he prepared chalk, isinglass, and other allied products. His business was located at Brooklyn, where he attained considerable success. He bought 3,000 acres of land in Baltimore in 1828, and on it located the Canton Iron Works, the first great enterprise in the iron industry in the United States.

When the Baltimore and Ohio Railroad was constructed in 1830, he produced the first locomotive engine from his own design, called Tom Thumb, the earliest built in the United States. The construction of this engine demonstrated

CALVIN COOLIDGE

Twenty-ninth President of the United States, whos ucceeded President Harding in 1923, and was elected for a full term in 1924, being inaugurated on March 4, 1925, with Charles G. Dawes as Vice-President.

the possibility of railroad transportation and saved the company from bankruptcy. Subsequently he sold his iron works in Baltimore and became interested in other iron factories, rolling mills, and blast furnaces, and was the first to successfully apply anthracite coal in puddling iron. He became president of the New York, Newfoundland and London Telegraph Company, assisted in laying the Atlantic cable, and served in both branches of the New York common council, where he advocated the construction of the Croton aqueduct. With a view of assisting in the liberal and industrial education of the young, he purchased property in New York and constructed the Cooper Union according to his own plans. Cooper was an active advocate of the greenback movement following the crisis of 1873, and was nominated for President by the National Independent party in 1876, but failed to carry any of the states. See **Cooper Union.**

COOPERAGE (ko͝op′ẽr-ȧj), the ancient art of making vessels of pieces of wood held together by hoops. The products are very numerous, including tubs, pails, casks, barrels, and firkins. The staves are upright pieces forming the sides of a barrel or cask, at each end of which is a head, and the whole is held together by metal or wooden hoops or bands. Barrels whose staves are widest in the middle are said to bulge in the center and taper toward the ends. Those having straight staves form a cylinder, or they are larger at one of the ends than at the other. Cooperage is known as wet or dry, the former producing vessels for holding liquids, while the latter is concerned in the manufacture of an inferior product to hold dry goods, such as crockery and chinaware. The best barrels are made of white oak, which must be thoroughly seasoned before the work is done, and the parts are held together by strong steel bands or hoops, which are put on hot so the contraction on cooling binds the work together more firmly. Formerly much of the work in cooperage was done by hand, but now the sawing and cutting is wholly by machinery.

COÖPERATION (kȱ-ŏp-ẽr-ā′shŭn), in economics, the association of a number of persons or societies for mutual profit in banking, manufacturing, or any of the industrial arts. It is a form of partnership in which the profits are wholly divided among those interested, in proportion to the contribution of each to the products. The enterprises of this character are usually divided into the three classes of *coöperative distribution, coöperative production, coöperative marketing,* and *coöperative societies for banking and loaning.* However, in a wider sense all production is coöperative, since it is mutually dependent upon nature, labor, and capital.

Robert Owen, the English social reformer, was one of the early advocates of this system in America, though it had long been in vogue in several European countries. The National Assembly of France voted $600,000 at the time of the Revolution of 1848 to encourage coöperation among the workmen. About 300 coöperative societies were organized under this appropriation as well as others receiving no government aid, with more or less success. A large number sprang into existence about the same time in Germany, Belgium, Italy, and England, most of which were organized for coöperation in distribution, but some with the view of furthering production. Coöperation in distribution is designed chiefly to save the retail profits by dispensing with middlemen. This line is well represented in Canada and the United States by coöperative retail stores and jobbing houses.

Among the difficulties to contend with in coöperative enterprises are the reverses to which all business is liable that requires reserve capital in order to tide it safely over obstacles, as panics or eras of excessive production. If the capital employed is only sufficient to conduct the business when the times are prosperous, a failure may result in panics, or at times when there is a stringency of money in the financial centers. In ordinary business the employer must be a competent man to manage successfully. He should have skill sufficient to put capital and labor together so as to render them profitably productive, and must be an organizer and overseer. It is required that he call into use good financial ability, ready discernment, judgment in buying and selling, and an accurate knowledge of the wants of the public. An employer may be without capital of his own, but he must have the necessary elements to successfully supervise and direct the energy and application of the employees. It is often impossible to secure these essentials in coöperative associations, from which cause many attempts to establish and conduct them on a stable and permanent basis have failed. Where all the members are qualified to do a certain portion of the work and a competent manager and supervisor is available, the system, once permanently established, may prove highly beneficial and render the most wholesome returns to all those interested in the enterprise.

COOPER'S CREEK, a river of Australia, formed in Queensland by the confluence of the Thomson and Victoria rivers. It flows in a general southwesterly direction through an arid region and discharges into Lake Eyre, which has no outlet to the sea. The river is low during the dry season and in places the water sinks out of sight, but in the rainy times it rises fully twenty feet and is about two miles wide.

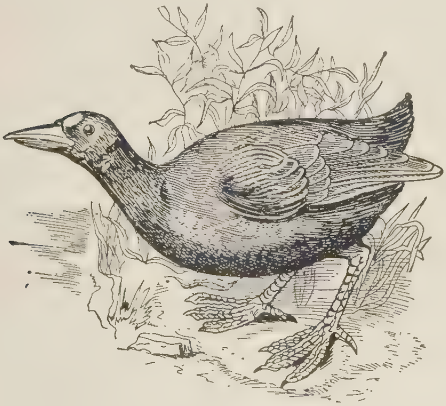
COOPER UNION, an institution of New York City, established in 1859 by Peter Cooper for the advancement of science and art. Instruction is free for the working classes, who have access to courses in art, science, and social and political economy through the medium of individual teaching and lectures. This institution is housed in a large building on the Bowery, at a point where that street divides into Third and

Fourth avenues, and was established at a cost of $630,000. It remained practically without endowment until 1900, when Andrew Carnegie made a gift of $600,000. The annual income at present approximates $100,000, while the endowments are $2,125,000, and the total value of all property is $3,250,000. Instruction is given both to day and evening classes, so as to meet the convenience of working people, and the average enrollment is about 3,000 students. The success of this laudable institution must in a large measure be ascribed to its founder and those who constituted its original board of trustees. These included Peter Cooper, Wilson G. Hunt, Daniel F. Tiemann, Abram S. Hewitt, Edward Cooper, and John E. Parsons.

COOSA RIVER (kōō′sȧ), a river of the United States, formed in northwestern Georgia by the confluence of the Etowah and Oostanaula rivers. It has a general course toward the southwest into Alabama, where it flows through the southern extremity of the Appalachian Range, and near Montgomery is joined by the Tallapoosa River to form the Alabama River. It is about 340 miles long and the lower part of its course is navigable.

COOS BAY (kô-ōs′), an inlet of the Pacific Ocean, on the western shore of Oregon. It is about 15 miles long and one mile wide, and receives the inflow from the Coos River. Near its entrance is Cape Arago, and on its banks are the cities of Marshfield and Empire City.

COOT (kōōt), a bird of the rail family, native to America and Eurasia, frequenting the coasts and inland waters. A number of the species are widely distributed, migrating to the colder zones in the spring. The common name by which most of the species are known is mud hen. The American coot has a black head and neck and a white bill and frontal plate, and is about fifteen inches long. The general color is brown or dark slate. Its wings measure fully 25 inches from tip to tip, and its weight is from one to two pounds. It is widely distributed in North America from the West Indies to the Saskatchewan. The favorite resorts are the reed-lined borders of ponds, lakes, and rivers. Its skill to run, swim, and fly is well developed. The food consists chiefly of seeds, worms, insects, fish, grasses, and other substances found in shallow water. Its nest is made in the reeds, in which from seven to ten ash-gray eggs, with small black spots, are laid. The young are skilled in swimming shortly after being hatched. While its flesh is eaten, it is not preferred as an article of food.



AMERICAN COOT.

COPAIBA (kô-pā′bȧ), or **Copaiva,** a valuable product obtained by making incisions in the stems of certain trees native to the tropical parts of America. It consists of a resin, known as the *resin of copaiba,* and a volatile oil called the *oil of copaiba.* The product has an acrid taste and a peculiar odor, and is valuable in medicine for treating chronic catarrh and other diseases. Castor oil is frequently used to adulterate the balsam of copaiba.

COPE (kōp), **Edward Drinker,** naturalist, born in Philadelphia, Pa., July 28, 1840; died April 12, 1897. His early education was acquired at Westtown Academy, and later he graduated from the University of Pennsylvania. He studied comparative anatomy at the Academy of Sciences in Philadelphia and spent two years in Europe at university work. He returned to America in 1864, was elected to the chair of natural sciences in Haverford College, and in 1867 engaged with the United States government survey, in which service he discovered about a thousand extinct and recent vertebrates. In 1869 he was elected to the chair of geology at the University of Pennsylvania. He was honored by membership in a number of American and European societies, was granted several medals, and lectured extensively. Among his best productions are "Energy of Life and How It Has Acted on Evolution," "On the Origin of Genera," "Snakes and Lizards of North America," "Origin of the Will," Origin of the Fittest," "Primary Factors of Organic Evolution," and "Systematic Arrangement of Extinct Batrachia, Reptilia and Aves of North America." He was senior editor of the *American Naturalist* for a number of years.

COPENHAGEN (kō-pe̱n-hā′ge̱n), the capital of Denmark, situated on the islands of Zealand and Amager, which are separated by the Kalvebod Strand, an inlet from the Sound. The portion situated on the island of Amager is called Christianshavn. An excellent harbor is located in the Kalvebod Strand, which is deep and well protected. The principal part of the city is well fortified with old and new fortifications, the strongest portion being the citadel of Frederickshavn.

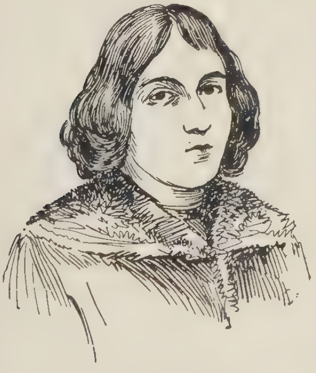
The principal streets radiate from the Kongens Nystrov, an irregular square, in which is a fine equestrian statue of Christian V. Among the chief buildings are the Church of Our Lady, the Church of Our Redeemer, the Holmen's

Church, the Palace of Charlottenborg, the Royal Academy of Art, and the Exchange Building. Many of the larger structures are decorated with works of art by Thorwaldsen, notably the Church of Our Lady, which contains a kneeling angel holding a shell for a font. The national capital, royal castle, and many other edifices are substantial in construction and beautiful in style. The royal library contains 750,000 volumes, while the National University, founded in 1497, has a library of 350,000 volumes and is attended by 2,000 students. Several botanical gardens, boulevards, and public parks beautify the city.

Copenhagen is the focus of many railroad lines that connect it in all directions. Electric street railways furnish convenient urban and suburban passage. It has gas and electric lights, stone and asphalt pavements, and an elaborate system of sanitary sewerage. In many parts of the city are fine equestrian monuments and fountains. The public schools and educational systems are efficiently organized and ably supervised and rank among the finest in the world. The manufactures include fabrics, machinery, clothing, toys, scientific apparatus, steamboats, musical instruments, leather, and earthenware. It is noted as a publishing center of books and periodicals. The commerce, both by railroad and ocean navigation, is extensive, and has long taken high rank among the most important of Europe.

The history of Copenhagen may be said to begin with the 12th century, when it was a small fishing village. It was fortified in 1167 and soon became of commercial importance, owing to its good harbor. In 1443 it became the capital of Denmark. At present it is the center of Danish art, literature, and education. Population, 1906, 426,540; in 1921, 608,718.

COPERNICUS (kō-pĕr′nĭ-kŭs), **Nicholas,** noted astronomer, born at Thorn, Germany, Feb. 19, 1473; died May 24, 1543. He studied Latin and Greek in his native town, later attended the university at Cracow, and studied law at the Bologna University. His natural bent was toward mathematics, which subject he studied through all its divisions. He became enamored of astronomy and journeyed to Rome, where he lectured on that subject and soon became recognized as a distinguished astronomer. After several years he returned to his native country, and in 1497 became canon at Frauenberg. He divided his day into three portions, one of which was devoted to the duties of his office, one to study, and the other to giving free medical advice to the poor. Beginning with 1507, he devoted his observations and knowledge in propounding newer and more accurate theories of astronomy.


NICHOLAS COPERNICUS.

The system of astronomy promulgated by Copernicus agrees in its essential features with that accepted at the present time. The systems of the Ptolemies and Tycho Brahe place the earth in the center and make the sun and planets revolve around it. However, the system promulgated by Copernicus places the sun in the center, reduces the earth to the humble position of a planet, and assigns the orbits of the planets around the central sun. His assignment of the planets is essentially correct, but he failed to accurately explain the laws by which their movements are governed. This portion of astronomy was left for Kepler and Newton to solve, who gave to the world a correct idea of the great movements of the heavenly mechanism. He wrote a number of books, among them a treatise on trigonometry, several works on astronomy, and a masterful treatise on money. His name is indelibly connected with modern astronomy, of which he is the undoubted founder.

COPIAPÓ (kȱ-pē̇-ȧ-pō′), a city of Chile, capital of the province of Atacama, 50 miles southeast of Caldera, its port on the Pacific Ocean. It is the focus of several railroads and is surrounded by a farming and mining country. Among the public utilities are a library, electric lighting, and a provincial high school. It has large smelting works and machine shops. In one of the public places is a statue of Juan Godoy, who discovered the silver mines in its vicinity. The city was founded in 1707. Population, 1918, 10,510.

COPLEY (kŏp′lĭ), **John Singleton,** painter, born in Boston, Mass., July 3, 1737; died Sept. 9, 1815. After securing an education, he visited Europe in 1774, and later settled permanently in London. Among the most famous of his portraits is one of Washington, who sat for him in 1755. His painting of the King and Queen of England is held in high esteem. Other paintings include "The Death of Major Pierson," "The Assassination of Buckingham," "The Death of Chatham," and "Charles I. Demanding the Surrender of the Five Members." His historical paintings rank with those of West, and his portraits are quite equal to the works of Gainsborough and Reynolds.

COPPER (kŏp′pĕr), a reddish ductile metal. It is the most ductile of the metals next to gold, silver, and platinum; the most elastic, except steel; and the most sonorous, except aluminum. Next to silver it is the most powerful conductor of heat and electricity. Several alloys are formed from copper. Brass is an alloy of one-third zinc and two-thirds copper. Bell-metal, gun-metal, and bronze are alloys of copper and tin. It forms a number of compounds and salts, all of which are poisonous. Copper was known in prehistoric times, the copper age preceding the bronze age. It was used in ancient Assyria and is mentioned in the Old Testament in Ezra viii., 27. The Greeks and Romans brought it in large quantities from Cyprus, where it was mined near Famagusta.

The United States ranks as the largest copper producing country of the world. The annual output was reported in 1922 at 1,540,685,500 pounds, which is about the average amount produced per year. This is about half of the entire annual output of the world. The three most important copper producing states are Arizona, Montana, and Michigan, in the order named. The principal sources of copper, aside from the United States, are Spain, Germany, Chile, South Africa, Mexico, and British Columbia, but it is found more or less widely distributed in all countries. It occurs native and with the minerals *cuprite, azurite, malachite, bornite, tenorite, chalcocite, chalcopyrite,* etc. In the upper peninsula of Michigan, on Lake Superior, it occurs largely as native copper. In Montana the ores yield about seven per cent. of copper and paying quantities of silver and gold, while the richest in quality found in Arizona yield about ten per cent. of copper. The use of copper is widening continually. Besides its use in electrotyping, engraving, and for household utensils, it is employed largely in shipbuilding, telephones, electrical appliances, cables, trolley wires, and cartridges. The world's supply of copper in recent years greatly exceeds that of former times. Canada produces about 90,000,000 pounds of copper annually, the output coming chiefly from British Columbia, Ontario and Quebec.

COPPERAS (kŏp′pẽr-a̤s), the hydrated protosulphate of iron, sometimes called *green vitriol.* It is found in a natural state, resulting from the decomposition of pyritous iron, and is prepared upon a large scale for various uses in art. The manufactured product is generally contaminated with various mixtures, such as the salts of zinc, magnesia, alumina, and copper, and the oxide of iron. Copperas is used in medicine as a tonic, for producing black dyes, for making ink and Prussian blue, and for many purposes in dye works.

COPPERHEAD (kŏp′pẽr-hĕd), a venomous serpent of North America, classed with the rattlesnake family. It is without rattles, but has loral plates on the head. The full-grown copperhead is about three feet long, is a sluggish animal, and has a light copper color with darker transverse bars. It is more abundant in the southern than in the northern states, and locally is known under the names of moccasin, red adder, and cottonmouth. The bite is often fatal.

COPPERHEAD, a nickname given to a political faction during the Civil War, which was generally considered to be in secret sympathy with the South. The name was applied from the copperhead, a poisonous serpent that gives no warning of his intended attack, therefore typical of a concealed foe.

COPPERMINE RIVER, a river of North America, in Canada. Its source is in Point Lake and it has a general course toward the north, discharging into Coronation Gulf, an inlet from the Arctic Ocean. It is about 300 miles long, but is not valuable for navigation, having a large number of falls and torrents in its course.

COPRA, the dried kernal of the cocoanut, from which cocoanut oil is expressed. About 25 gallons of oil are obtained from 500 pounds of copra. See **Cocoanut.**

COPTS (kŏpts), the descendants of the ancient Egyptians. They make up the remnant of the once numerous church of Egypt that maintained the celebrated school of Alexandria. Writers generally agree that they were converted to Christianity by Saint Mark, though they hold that one nature, not two, existed in Christ. The Greeks tyrannized over them, which caused them to submit to the Mohammedans, and to aid them in conquering Alexandria in the year 640 A. D. There are still about 250,000 Copts in Egypt, most of whom reside in its upper provinces Their dress is similar to the apparel of the Mohammedans, and they are of middle height and dark complexion, and have curly hair. Their language bears the same relation to that of the ancient Egyptians that the Italian does to the Latin. The nucleus of the language came from the ancients, but the spoken tongue is very different from the early spoken tongue on account of the foreign words which were inserted by long contact with the Greeks, Arabs, and Moors. In the 10th century Arabic was used largely instead of the Egyptian, since which time the language has been more or less transitory. The Copts speak a dialect of their own, but learn the Arabic and use it largely. They maintain several convents and a number of secondary monasteries, and support a patriarch, bishops, presbyters, archdeacons, and other minor church dignitaries.

COPYING MACHINE, a device for duplicating letters and manuscripts. Machines of this class may be divided into two kinds, those used in copying writing done by hand or by a typewriter and those in which the copy and the original are made at the same time. In the former it is customary to use a book containing leaves of thin paper, so the letters or manuscripts can be indexed in alphabetical order, and pressure for copying is furnished by a letter-press. The ink used is made specially for the purpose, or common ink may be thickened by adding sugar or some other substance to prevent it from drying rapidly, and when letters written on a machine are to be copied it is necessary to use a copying ribbon. The general method of copying is to place the written manuscript in the copying book, with a piece of oiled paper beneath, then turn a leaf of the book over the writing to be copied, which is covered with a damp sheet of blotting or unsized paper, and over this is placed another piece of oiled paper to protect the book from absorbing moisture, after which it is placed in the letterpress, and the writing is transferred to the page of the book which lies between the writing and the damp sheet. Pressure is obtained by a screw or lever. Several letters can be copied on the same page or even on a number of pages at the same time. The copying books used most extensively contain 1,000 leaves, and when filled they are marked on the back and placed in the library of records.

More recently it has become customary to write and copy at the same time, which may be done either by hand or with the typewriter when carbon paper is placed between the sheet containing the original and that on which the copy is to be preserved. This method has an advantage where a large amount of business correspondence is necessary with one person or company, especially where it runs through a period of several years. In that case the copies are attached to the letters to which reply is made, hence it is possible to file in a systematic order both the letter received and the reply sent in answer to the same. By using a typewriter it is possible to obtain from one to five carbon copies from one writing.

Thomas A. Edison is the inventor of the *mimeograph,* by which an indefinite number of copies of either hand or machine writing may be obtained. The work is done by placing a sheet of thin paper, coated on one side with a film of paraffin wax, over a plate of steel, known as the *baseboard,* and writing the copy with a fine-pointed steel stylus, using care that the impressions are made entirely over the steel plate, whose surface is corrugated much like a very fine file. When the stencil, or written page, is prepared, it is placed in a frame, which holds it tight and smooth, a sheet of paper is laid on the baseboard, the frame containing the stencil is turned over it, and an ink roller is passed over the surface of the latter, the pressure of which forces the ink through the stencil and produces the writing on the sheet beneath. Stencils prepared by the typewriter are likewise on paraffin paper, the type producing the perforations. A newer form of the mimeograph consists of a device with a revolving cylinder, on which the stencil is attached and the ink on the inner side is forced through and produces the writing on a sheet of paper placed on the baseboard beneath. It is possible to procure several hundred copies from the same stencil by either method.

The *blue print process* is used extensively in copying plans and drawings prepared by architects and engineers. Another device, the *hektograph,* may be used in obtaining from fifty to one hundred copies, but the original writing is done wholly by hand. It consists of a pad or tablet prepared with glycerin and gelatin. The original writing is done with an aniline ink, to which a small per cent. of glycerin is added, and is written on ordinary paper, and this is placed face down upon the hektograph, which receives the copy as soon as the writing comes in close touch with it. To reproduce the writing, a sheet of paper is pressed carefully down upon the hektograph, which transfers a copy to the sheet of paper. The writing is reproduced by slight portions of the ink adhering to the surface, and the number that may be obtained depends upon the care exercised.

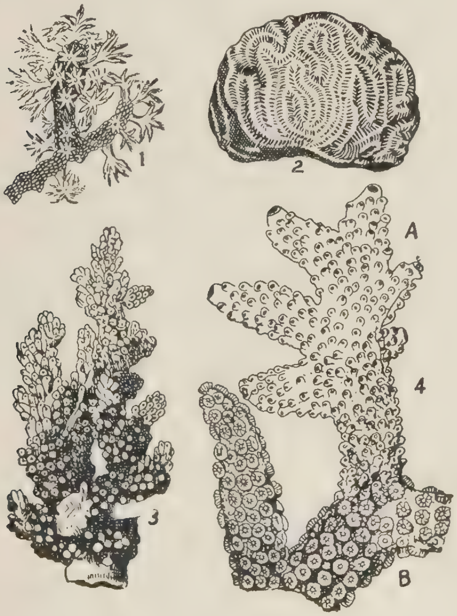
COPYRIGHT (kŏp′ȳ-rīt), the exclusive privilege secured by law to authors and their heirs or assigns to publish and sell their productions for a certain time. In the United States the copyright law requires the author, in order to secure a copyright, to file in the office of the librarian of Congress, or deposit in the mail within the United States, addressed to the librarian of Congress at Washington, D. C., a copy of the title of the book, or description of engraving or article, before publication. He is required to send two copies of the production to the same office not later than the day of publication and to pay a fee of fifty cents. A certificate of the copyright is issued on the payment of an additional fee of fifty cents. In Canada the fee is the same, but one copy of the production must be filed in the library of the Parliament of Canada, and one copy in the British Museum, London. The copyright, both in the British possessions and the United States, extends for twenty-eight years, and, if at the end of that time the author is still living, he may obtain its extension for fourteen years longer; or, if dead, his living representatives may obtain its extension, making in all forty-two years. However, in Canada the author or proprietor must publish a notice of the extension in the *Canadian Gazette.* The productions that may be copyrighted include books, engravings, paintings, photographs, maps, blank forms, and many others produced by authors, painters, draughtsmen, etc.

In 1878 a movement began in Paris to promote the *international copyright,* whereby authors and artists hoped to secure protection in various countries. A conference met at Bern, Switzerland, in 1885, at which representatives were present from France, Germany, Spain, Great Britain, Sweden, Norway, Switzerland, Belgium, Italy, Portugal, Denmark, and Mexico to consider the copyright interests of those nations. Great Britain confirmed the Bern convention in 1887 and the United States Congress enacted a law in 1891 by whose terms international copyrights are recognized. The provisions include that the entire manufacture of the foreign copyrighted work must be done within the country where it is to be protected.

COQUELIN (kôk-lăn′), **Benoît Constant,** actor, born at Boulogne-sur-Mer, France, Jan. 23, 1841. He evinced much aptitude for the stage at an early age and was admitted to the Conservatoire in Paris on Dec. 29, 1859. His first performance was given at the Théâtre Français in 1860, and, beginning with 1884, he was a regular associate of that institution. His efforts in the dramatic profession of France took high rank, and he played with marked success in Europe and the United States. He is the author of several books which comprise valuable additions to the history of the stage. They include "The Actor and His Art." He died Jan. 27, 1909.

COQUIMBO (kō̇-kē̇m′bō̇), a seaport of Chile, in the province of Coquimbo, 10 miles south of La Serena, with which it is connected by a railway. The surrounding country is agricultural and mining. It has a good harbor and a large export trade, chiefly in copper, gold, silver, and fruits. The principal buildings include a theater, a number of schools, and extensive warehouses. Population, 1926, 11,864.

CORAL (kŏr′a̤l), the hard structure or skeleton secreted by the tissues of various marine polyps. These organisms so nearly resemble plants that they were long classed with plant life. They propagate themselves by a kind of budding as well as by the production of eggs and young similar to other animals. They are usually compound, many individuals being united into a colony. The coral assumes various forms, being branched fanlike, brainlike, featherlike, or chainlike. The hard coral formations seen on the market are composed of the lime of the ocean, which is incorporated among the tissues of the body, and in this form the remains of these animals make up vast calcareous deposits in the warm seas. The calcareous deposition begins when the polyp is still newly formed, and adheres to a rock or some other object, to which it becomes affixed and on which the coral is built up or grows. In general the deposits of the former generations form the base to which the growing young life is attached. The reforming coral polyps grow only in regions where the winter temperature of the water is never lower than 68° Fahr., but there are several species that grow in colder water. The region where reef-bearing corals live extends 1,800 miles on each side of the Equator, except in the vicinity of Bermuda, which lies in the warm waters of the Gulf Stream. The calcareous remains of polyps form coral reefs. They are classed as fringing, barrier, and encircling reefs, according to the particular manner in which they form coral islands.



1, Red Coral; 2, Brain Coral; 3, Tree Coral; 4, Madrepore Coral. *A*, Skeleton; *B*, Living Corals.

Coral islands begin as a *fringing reef* or narrow belt of coral rock, lying near the shore of an ordinary island. *Barrier reefs* are wider than fringing reefs and lie at a greater distance from the shore. An *encircling reef* is similar to a fringing reef and usually encircles the island, forming an *atoll.* A *lagoon* is formed by the island sinking, the coral polyps building upward from the reefs, which eventually leave an open space of water or lagoon in the center. Polyps do not grow at a depth exceeding one hundred feet, nor above the surface of the water. The action of waves breaks the delicate coral structures, and these, together with shells from various shellfish, are ground into fragments and thrown by waves over the general level of the water. In this way reefs and coral islands are formed, but they seldom exceed twelve feet in height.

The islands formed by the coral remains become covered with trees and plants, the seeds being conveyed through the agency of winds and birds from adjacent islands. Reptiles and small quadrupeds are carried to them by trunks of trees floating in the water. Thus, divers forms of life are brought to and extended on the island and reefs. Various products made of different species of polyps are the coral of commerce. Among the valuable classes are the pink, red, and black. The industry of coral fishing is carried on in various regions, particularly in the Mediterranean Sea. Many forms of coral are capable of taking on a polish and are useful in manufacturing ornaments, charms, and divers commodities useful in domestic and social life.

CORAL SEA, the name applied to the portion of the Pacific Ocean lying northeast of Australia. It is bounded on the north by New Guinea and the Solomon Islands, east by the New Hebrides, south by New Caledonia and the Pacific, and west by Australia. The extreme depth, according to soundings made in 1874, is 14,700 feet. It is so named from the large number of coral reefs and islands located within its confines.

CORBIN (kôr'bĭn), **Henry Clark,** soldier, born in Clermont County, Ohio, Sept. 15, 1842. He attended a private academy and studied law, and in 1862 entered the Union army. He was with the Army of the Cumberland until the close of the Civil War. He was mustered out of the volunteer service and entered the regular army in 1866, when he was promoted to the rank of captain and served ten years on the frontier. In 1880 he was made major and assistant adjutant general, was subsequently promoted to the grade of brigadier general, and rendered efficient service in the war with Spain. Congress conferred upon him the rank of major general in 1900. In 1904 he received command of the Atlantic division and served for a time in the Philippine Islands. He died Sept. 8, 1909.

CORCORAN, William Wilson, banker and philanthropist, born in Georgetown, D. C., Dec. 27, 1798; died in Washington, D. C., Feb. 14, 1888. He attended Georgetown College and became clerk in an auction store. In 1828 he was made agent for the real estate owned by the United States and the Bank of Columbia, in the District of Columbia, holding that position till 1836. During the Mexican War he placed many loans for the government. His close attention to business caused him to accumulate a vast fortune, much of which he used in endowing institutions of charity and learning. His principal gifts were made to the Corcoran Art Gallery (q. v.).

CORCORAN ART GALLERY, a collection of works of art at Washington, D. C., founded by William Wilson Corcoran and opened to the public in 1869. The Corcoran donations, including the lot and building, amounted to $1,600,000. The building is located on New York avenue, opposite the executive grounds, and has a length of 265 feet. It is constructed of beautiful white marble in the Neo-Greek style, after the plans of Ernest Flagg, of New York. The collections include sculptures, ceramics, paintings, and portraits, and a school of art is maintained to further interest and skill in painting and sculpturing. The famous collections include Hiram Powers's "Greek Slave" and Vincenzo Velas's "Last Days of Napoleon." Visitors are required to pay a small admission toward a charity fund and are admitted only on special days.

CORDAY D'ARMONT (kôr-dā' dẹ där-môn'), **Marie Anne Charlotte,** assassin of Marat, born in Saint Saturnin, France, July 28, 1768; guillotined at Paris, July 17, 1793. She descended from a poor Norman nobleman of literary tastes and her mother died while she was an infant. Her younger days were spent in a convent at Caen, where she read the lives of Voltaire, Plutarch, and Rousseau. She sympathized with the Revolutionists, and when her lover, an officer in the garrison of Caen, was assassinated, she determined to cause the death of Marat, whom she thought implicated in the death of her lover. On July 13, 1793, she secured admission to his house under a misrepresentation, and there drove a dagger into his bosom. Marat died immediately.

CORDELE, county seat of Crisp County, Georgia, 65 miles south of Macon, on the Seaboard Air Line, the Georgia Southern and Florida, and other railroads. It has oil mills, machine shops, wholesale houses, and an ice plant. The features include the city hall, court house, federal postoffice, high school, public library, and Confederate monument. It was incorporated in 1888. Population, 1920, 6,538.

CORDILLERA (kôr-dĭl'lĕr-ȧ), a word of Spanish origin, applied generally to a ridge or chain of mountains. In America it is the name of the vast mountain system which extends along the Pacific coast of North and South America, from the northern part of Alaska to the island of Tierra del Fuego. The Cordilleras of these continents include the Andes of South America and the mountain ranges of North America known as the Rocky Mountains, the Sierra Nevada, the Sierra Madre, and a number of chains in Canada and Alaska.

CORDOVA (kôr'dô-vȧ), or **Córdoba,** a city of Spain, on the Guadalquivir, capital of the province of Cordova. It is situated at the base of the Sierra de Cordova, at an altitude of 325 feet, and has railroad and electric railway facilities. The cathedral, built as a mosque in the 8th century, is in the Moorish style of architecture. In the central plazza is an equestrian statue of Gen. Paz. The Romans founded Cordova in 132 B. C., later it fell into the hands of the Goths, and subsequently became a possession of the Moors. It was the leading city of the Moorish kings from the 9th to the 12th century, and they built many mosques, palaces, and public places. Population, 1920, 65,160.

CORDOVA, or **Córdoba,** an important railroad and commercial city in the interior of Argentina, capital of the province of the same name. It is surrounded by a fertile country, which has productive mineral interests. The city is an important railroad junction between Rosario, on the Paraná, and Tucumán. Its manufactures embrace machinery, cigars, flour, clothing, and furniture. Waterworks, pavements, electric lights, and street railways are among the improvements. It was founded by the Spanish in 1573. The university was built by the Jesuits in 1613 and in 1871 it was the seat of the first national exposition of Argentina. Population, 1906, 56,457; in 1919, 72,830.

CORDUROY (kôr'dů-roi), a kind of cotton material in which the pile is cut like that in velvet, but the surface is corded or ribbed. The pile weft is bound to the cloth, causing the ribs which are separated by a but or division. Corduroy is used extensively in making wearing apparel for men.

CORDUROY ROAD, a highway built in marshy places by laying small logs side by side.

It is so named from its rough or ribbed surface. Corduroy roads are constructed only in sparsely settled regions, chiefly in the swamps and marshes found in many of the forests, and are used principally in hauling timbers and lumber.

COREA (kō-rē'ȧ), or **Korea,** now Chosen, a province of Japan in Asia, located between the parallels of 34° 17′ and 43° north, and between the meridians of 124° 38′ and 130° and 33′ east. It is bounded on the north by Manchuria, east by the Japan Sea, south by Corea Strait, and west by the Yellow Sea. The country occupies mainly a peninsula, separated from Japan by Corea Strait and partly from Manchuria by the Yalu River. The length from north to south is about 600 miles; breadth, 135 miles; and area, 86,100 square miles.

Description. The surface is generally mountainous, with numerous fertile valleys and a productive sea coast. The highest mountains are in the northern part, where the elevations have a height ranging from 3,500 to 8,000 feet, and an elevated ridge extends the entire length of the peninsula, lying chiefly along the eastern seaboard. Most of the northern part and all of the mountains are well wooded, but the hills and fertile plains of the west and south have few trees.

Corea has few large rivers and the drainage is chiefly toward the south and west. The Yalu, on its northern boundary; the Ta-tung, in the central part, and the Keum, in the southern section, are the principal rivers, all of which discharge into the Yellow Sea. The Tuman, in the eastern part, is the only river of note that flows into the Sea of Japan. All sections of the country have an abundant rainfall, which has an annual average of 36 inches, and most of the precipitation is during the rainy season between May and September. The climate, like that of Japan, is equible and healthful. In summer the average temperature is 75°, while the range is from 5° in winter to 90° in summer.

Though Corea does not possess an extensive flora, it is quite rich in valuable forests. Among the chief species are fir, lime, pine, oak, birch, ash, bamboo, mulberry, and hornbeam. Forestry is promoted as an enterprise and the government has a monopoly in ginseng. Many wild animals are abundant, especially the fox, badger, deer, otter, and squirrel. The birds include the crane, ibis, hawk, egret, heron, oriole, cuckoo, kingfisher, duck, and goose. Water fowls are abundant along the coast.

Mining. The mining industry is carried on chiefly under concessions granted to companies organized by capitalists in Great Britain, Germany, Russia, and the United States. Coal deposits are worked in the west central parts, and gold is obtained by placer mining as well as from the ore. The value of the output of gold is about $2,500,000 annually. Copper is found in many sections and most of the output is exported. Other minerals worked more or less extensively are iron, galena, granite, limestone, and sandstone. Most of the coal obtained is bituminous, but profitable veins of lignite and anthracite coal are worked.

Agriculture. Farming is the principal occupation, and rice is the most valuable crop. Most of the land is held in small estates and the soil is tilled with a great deal of care, every available portion being worked to good advantage. Barley, oats, and millet are grown chiefly in the northern part, and tobacco, wheat, maize, hemp and cotton comprise the principal crops in the south. All kinds of vegetables and many varieties of fruit are grown extensively. Cattle raising has had a small share of attention, but this enterprise is being introduced, and milk, butter, and cheese, though largely unknown in Corea, are coming into use as articles of food. Oxen of large size are grown for the market and as animals of burden and draft, and the native horse is a small animal, not much larger than a Shetland pony. Goats, hogs, and poultry receive more or less attention.

Manufacturing. The Coreans possess little skill in manufacturing when compared to the Chinese and Japanese. Formerly they possessed considerable ability in this enterprise, and it is largely due to them that the arts and sciences of China were introduced to the people of Japan. Paper is at present one of the chief manufactures. Next in order are products made from hemp and grass, such as mats and cordage. Split bamboo screen, inlaid woodwork, brassware, coarse cotton and silk clothing, hats, and umbrellas are among the general manufactures. The Coreans make a fine grade of thread and a large variety of silk and cotton textiles. Little attention is given to the manufacture of modern machinery, but a large variety of implements and utensils used in gardening and farming are produced. The fisheries yield many articles of food and for export. Among the chief catches are the salmon, halibut, herring, shark, sardine, and whale, all of which enter more or less prominently into manufacturing enterprises, such as curing and canning. The meat of the whale is esteemed as an article of food among the native Coreans.

Commerce and Transportation. Corea was long tributary to China, hence its trade with foreign countries remained limited many centuries. Formerly it was almost entirely with China and Japan, but eight of its seaports were opened to the commerce of the world prior to 1900. The imports somewhat exceed the exports. Among the chief imports are kerosene, tobacco, metals, and machinery; while the exports include copper, rice, hides, ginseng, whale flesh, and paper. Few highways have been improved in a first-class condition and travel is still largely in Sedan chairs and on horseback. The rivers are used largely for transportation. Railroads were unknown until 1901, when a line was constructed between Seoul and Chemulpo, a distance of twenty-five miles. A railway was built soon after from Seoul to Fusan, on the Corea Strait, a distance of 285 miles, and another line extends from Seoul to Wiju, at the mouth of the Yula. The total lines in operation do not exceed 1,000 miles, but there is a large mileage of telephone and telegraph lines, and electric railways penetrate from Seoul into the adjacent country.

Government. Corea paid tribute to China until 1895, when it became an absolute monarchy, but the Portsmouth Treaty, in 1905, made it tributary to Japan. The government is administered by a governor general resident at Seoul, the capital, but all diplomatic business is transacted from Tokio, the seat of the Japanese government. The country is divided for local administration into thirteen provinces and 339 kun or prefectures. In methods of education it remained distinctly Chinese until 1895, when a new public school system was inaugurated, and schools provide work from the primary department to the university at Seoul. A number of the higher institutions maintain departments for languages, including those under the instruction of Japanese, Chinese, German, Russian, English, and French. A number of mission schools are maintained by many of the Christian denominations.

Inhabitants. Corea is populated largely with a class of people of Mongolian descent, who seem to have sprung from intermarriages of the Ainos, Japanese, and Chinese. Some writers class the Coreans immediately between the Chinese and Japanese, but they are somewhat taller and more robust and have a lighter complexion than either of these races, hence some think that they contain a mixture of Caucasian blood. Polygamy is practised to a limited extent, but is not authorized as an institution, and the women live in seclusion. Colored clothing and hats of horsehair are worn by the nobility, while the common people make use largely of white and uncolored clothing. Buddhism is the chief religion, but in practice it is more or less perverted by Shamanism, and has developed into a form of ancestor and animal worship. The Protestant and Roman Catholic churches find Corea a prolific field for missionary work. Seoul, the capital, is located near the mouth of the Han River. Fusan, on Corea Strait, is important as a port of entry. Other cities include Chemulpo, Pingyang, and Kai-Ku. Population, 1923, 15,560,108.

History. The early history of Corea is shrouded in doubt and mystery. The nation is thought to have been founded about 1120 B. C., but little is known of it until 108 B. C., when it was made a part of the Chinese Empire. It was divided into principalities about the beginning of the Christian Era, but remained dependent upon China until about 960 A. D., when one of the principalites became independent and soon after annexed the others. It continued to remain an independent kingdom about 300 years, in which Buddhism was introduced and the arts and sciences made strides of advancement. In 1392 the dynasty was overthrown and the priests were banished, and the country was successively invaded by armies of China and Japan, each seeking to secure a preponderance of influence. Japan retained Fusan as a trade center many centuries, but the country was nominally a Chinese dependency until 1895, when it became an independent monarchy.

The first treaty with foreign nations was concluded in 1876, when the ports of Gensan and Fusan were opened to trade, and all the treaties now in force date since that year. The Chino-Japanese War of 1894-95 was caused by a contest of the two nations to control the trade and political tendencies of the country, but the defeat of the Chinese army at Pingyang and the destruction of their fleet in the naval battle off the Yula River decided the fortunes of war in favor of Japan. The treaty that followed made Corea independent, but the Treaty of Portsmouth, concluded after the close of the Russo-Japanese War, in 1905, made Corea tributary to Japan. Japanese occupation is stimulating internal improvement, widening educational influences, and enlarging the commercial and manufacturing enterprises.

CORELLI, Marie, novelist, born in Italy in 1864. She descended from Italian and Scotch parentage, was adopted in infancy by Charles Mackay, and received her training chiefly in England and France. For some time she studied in a French convent, where she received general instruction and a first-class musical training. In 1886 she published her first work under the title "A Romance of Two Worlds." Subsequently she devoted herself chiefly to literature and the collection of rare books. Among her chief works are "Thelma," "The Mighty Atom," "Vendetta," "The Master Christian," "The Murder of Delicia," "Temporal Power," and "God's Good Man." She died Apr. 21, 1924.

CORENTYN (kō-rĕn-tĕn′), a river of South America, forming nearly all of the boundary between Dutch and British Guiana. It rises near the boundary of Brazil, in the Tumuc Humac Mountains, has a northerly course, and discharges into the Atlantic Ocean. It is about 400 miles long and is navigable for large steamers only 40 miles, but small vessels navigate it about 150 miles. In its middle course are a number of large rapids and waterfalls.

CORFU (kŏr-fo͞o′), the most northerly of the Ionian Islands, located at the entrance of the Adriatic Sea. The area is 428 square miles. It has a mountainous surface, which is diversified by a number of fertile valleys, and the most elevated point is Pantokrator, 2,995 feet above the sea. Much of the soil possesses fertility and produces a fine quality of cereals, grapes, and fruits. Mineral salt is abundant.

It was settled by a Corinthian colony in the 8th century B. C. and was a loyal supporter of ancient Greece. In 229 B. C. it was made a part of the Roman Empire. Since 1863 it has belonged to Greece. The capital, Corfu, is a fine city. It contains the government buildings, a cathedral, the university, a public library, and free schools. It has a good harbor and a considerable commerce. Population, 1922, of the city, 21,690; of the island, 128,548.

CORIANDER (kō-rĭ-ăn′dẽr), a plant native to many parts of Europe, belonging to the parsley family. When the fresh plant is bruised, it has an unpleasant odor, but when dried the smell and taste are agreeable. It has a branching stem from one to three feet high, and is cultivated for its fruit, which is the coriander of market. It is used in medicine as a carminative, and in cookery and confectionery as an aromatic. The plant has been naturalized in some parts of Canada and the United States.

CORINTH (kŏr′ĭnth), county seat of Alcorn County, Mississippi, ninety miles southeast of Memphis, Tenn., on the Illinois Central, the Southern, and the Mobile and Ohio railroads. In the Civil War it was regarded an important point and was held successively by both armies. The Confederates evacuated it on May 30, 1862, and it was occupied by Gen. Rosecrans with a force of 20,000 men until Oct. 3 of the same year, when it was attacked by the Confederates under Generals Van Dorn and Price, who were repulsed. The Confederates lost 3,648 men and the Union army, 2,359. At present it has a growing trade in farm produce and merchandise. The chief buildings include a library, several churches and schools, and a number of county buildings. It has manufactures of brooms, woodenware, and machinery. Population, 1900, 3,661; in 1920, 4,946.

CORINTH, a famous city of antiquity, on the Isthmus of Corinth, a neck of land uniting the Peloponnesus with northern Greece. Owing to its beauty and commercial importance, it was called "The Star of Greece." It had three harbors and was important mainly because of its location between the Adriatic and Aegean seas. Among the cities of Greece it was highly renowned, commanded a point of advantage between the trade from Africa and that of Western Europe, and was fortified by walls of stone, on which stood its citadel. Its ancient splendor and magnificence are evidenced only by a few ruins. It was the seat of the Isthmian games, which attracted much attention during Grecian power. Corinth was founded by Sisyphus, an Aeolian, about 1350 B. C. The government was under an oligarchy and a king at different times; Periander was its greatest king and fostered its growth and prosperity. The rise of Athens caused the Peloponnesian War. Later the Corinthian War in conjunction with Thebes, Athens, and Argos was waged against Sparta, and it became the head of the Achaean League. Alexander the Great was elected leader of the Greeks at Corinth against the Persians.

The Romans destroyed Corinth in 146 B. C., but Julius Caesar rebuilt it and made it a prosperous trading center a hundred years later. It was the residence of Saint Paul for a year and a half, who founded here a Christian church, and later wrote his two letters to the Corinthians. After the fall of Rome it was taken by the Slavs, Franks, Turks, and Venetians, and later again by the Turks. It was freed from the Sultan in 1822, but was destroyed by an earthquake in 1858. The city has been rebuilt and is enjoying considerable trade, owing to the canal cut through the isthmus, which is the seat of a large commerce. It has several railroad connections. The new city is more properly called New Corinth. During its greatest prosperity it had 300,000 inhabitants. Population, 1922, 5,265.

CORINTH, Gulf of, an inlet of the Mediterranean Sea, between the Peloponnesus and northern Greece, about eighty miles long. It is beautifully located, has a large number of bays, and the Isthmus of Corinth is toward the east. The gulf has the appearance of an inland lake. It is sometimes called the Gulf of Lepanto.

CORINTH, Isthmus of, an isthmus connecting the Peloponnesus with northern Greece. It is from four to eight miles in width. A ship canal 3.91 miles long, twenty-six feet deep, and sixty-nine feet wide at the bottom has been constructed across it. The canal was opened to commerce in 1893. It saves a long detour in the coasting trade and avoids rounding Cape Matapan. The canal is located along the route on which work was prosecuted in the reign of Emperor Nero in the year 67 A. D. This canal is at sea level and without locks.

CORINTHIANS, Epistles to the, two canonical books of the New Testament, commonly called the First Corinthians and the Second Corinthians, both written by Saint Paul. The *First Corinthians* was written at Ephesus in the year 57 to the Church at Corinth, which Paul had founded in 50, and is a rebuke for vanity, self-seeking, party spirit, impropriety at public meetings, and disrespect to the apostle's authority. It emphasizes the doctrine of the resurrection. In the *Second Corinthians* the apostle makes a summary of his true authority, but it is earnest as well as conciliatory in its statements. Both books have been almost universally received as genuine letters of Paul, and in this respect they rank with the epistles to the Romans and the Galatians.

CORIOLANUS (kō-rĭ-ō-lā′nŭs), **Caius Marcius,** a Roman patrician, so named on account of his bravery in capturing Corioli, in 493 B. C., when that town belonged to the Volsci. He was noted as a man of proud and haughty spirit and was strongly opposed to the plebeians, who refused to support him for consul.

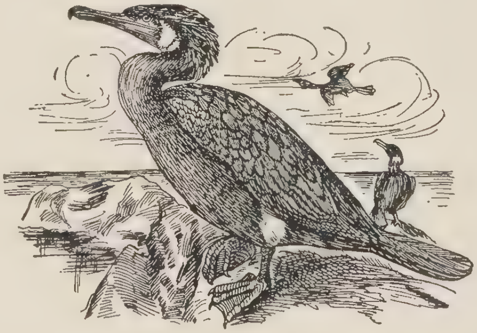
To retaliate he made a speech in the senate against a gratuitous contribution of corn which had arrived from Sicily, and insisted that the plebeian tribunes should be discharged from office. These radical speeches caused his impeachment and banishment. For safety he united with the Volscians and aided them in the wars with the Romans. He was so successful that his approach alarmed the Romans. They sent deputations to plead with him for the city, and, only after his relatives implored him in tears, he withdrew to the territory of Volsci, where he lived to enjoy an old age. The "Coriolanus" of Shakespeare is founded on this history, in which he gives the subject a grand and aristocratic character.

CORK, a city of Ireland, on the Lee River, in the County of Cork. A part of the city is on an island, which is joined to the mainland by nine bridges, but the principal site is on the river banks. Though about fifteen miles from the sea, it has a vast commerce and excellent railroad connections with the interior. The exports consist largely of eggs, ham, butter, cereals, bacon, and live stock. Among the manufacturing enterprises are foundries, distilleries, tanneries, breweries, and immense shipyards. The city contains a number of excellent institutions of learning, among them Queen's College, founded in 1849. It has fine Roman Catholic and Protestant cathedrals, a customhouse, and other public buildings. The public park is a finely improved tract of 240 acres and includes a race course. Cork is well fortified and has ample wharfs and facilities for the anchorage of vessels. A part of the trade is carried by way of the fine harbor at Queenstown, about eleven miles below the city. Gas and electric lights, waterworks, pavements, and rapid transit are among the improvements. The Danes built walls around a portion of the city in the 9th century. It was surrendered to Henry II. in 1172. Two members represent Cork in Parliament. Population, 1921, 76,632.

CORK, the light, porous outer layer of bark of the cork oak. It is a very elastic tissue, consisting of thin-walled and nearly cubical cells. The *cork tree* or *cork oak* is abundant in Portugal, Spain, Northern Africa, and most countries bordering on the Mediterranean. It attains a height of from twenty to sixty feet and a diameter of three feet, and has oblong, evergreen leaves. The acorns, which ripen from September to January, depending upon the climate, are edible. Specimens are often seen in which the trunk has a circumference of fifteen feet, owing partly to the thick bark and the great age, which sometimes is from 300 to 400 years. When the tree reaches an age of from fifteen to twenty-five years, the bark is taken off. The first cutting is coarse, but the product improves by successively taking off the bark. A crop is taken off about every eight years, the third being of the finest quality. It is removed with an ax, by which cuts are made both lengthwise and crosswise of the tree, and care is used not to damage the inner bark, else the tree will die. Cork is used extensively for artificial limbs, shoe soles, life belts, net floats, and stopples for bottles and flasks. For the purpose of manufacturing corks, machines are utilized by which many thousands can be cut in a day. The machines and instruments used are of superior material and have a sharp edge so they cut easily. This is necessary, owing to the elasticity of the article.

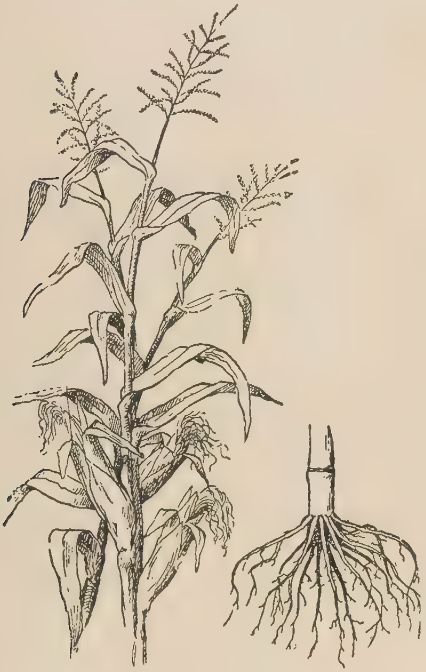
CORLISS (kôr'lĭs), **George Henry,** inventor of the Corliss engine, born at Easton, N. Y., July, 2, 1817; died Feb. 21, 1888. He invented a device for stitching leather at an early age, and later made a number of useful machines. The most important invention is an improvement for steam engines, by which a uniform motion is secured by means of connecting the governor with the cut-off. By this arrangement the waste of steam is prevented, so the Corliss engines saved the price paid for them in a single year. He founded the Corliss Steam Engine Company in 1844, which grew to be the largest steam engine factory in the world. He was a member of the Rhode Island Legislature for two years, beginning in 1868. In 1872 he was a commissioner for the Centennial Exposition, and served as a Republican presidential elector in 1876. His skill in inventions was recognized by numerous societies, who made him the recipient of high honors.

CORMORANT (kôr'mȯ-rạnt), the name of a large web-footed sea bird of the pelican family. Vast numbers of these birds frequent islands in most parts of the world. They have a long neck, hooked bill, short wings, and stiff and rounded tail. The European species is larger than a goose, occupies cliffs by the sea, and feeds on fish and small quadrupeds. It builds its nests on rocky shores and in trees. The species of America and Australia are very numerous. Some species have been trained to fish, for which purpose they are still domesticated and used in China. The common plan is to fasten a string around the neck to prevent the bird swallowing the fish that it catches. Later it


CORMORANT.

learns to bring the fish to its master without this precaution being necessary. The cormorants of the Columbia River and the eastern coast of North America are highly prized for their beautiful plumage.

CORN, Indian, or **Maize,** a well-known plant of the grass family, one of the most important cereals grown in the Temperate Zone. It is cultivated extensively as a food and for many purposes in manufacturing. The stem grows from three to twenty feet in height; the average in corn-producing districts is about ten feet. The stem is filled with a pithy, fibrous structure, is divided by nodes at regular intervals, and its outside covering is of a siliceous formation. It sends out brace roots from the second or third nodes to aid in supporting the stalk when reaching its larger size. The ears are developed within the leaf-sheaf at one or two of the nodes, about four feet from the ground. They consist of a *cob* with from eight to twenty regular rows of grains. The grains of the species which are grown most extensively are yellow or white, but some are red or a mixture of red with white or yellow. Threads of corn-silk are attached to the germs of the grains, which serve to carry pollen from the *tassel* above to the embryo. Corn is considered of greater value as a nutritious food than rye, buckwheat, or barley.

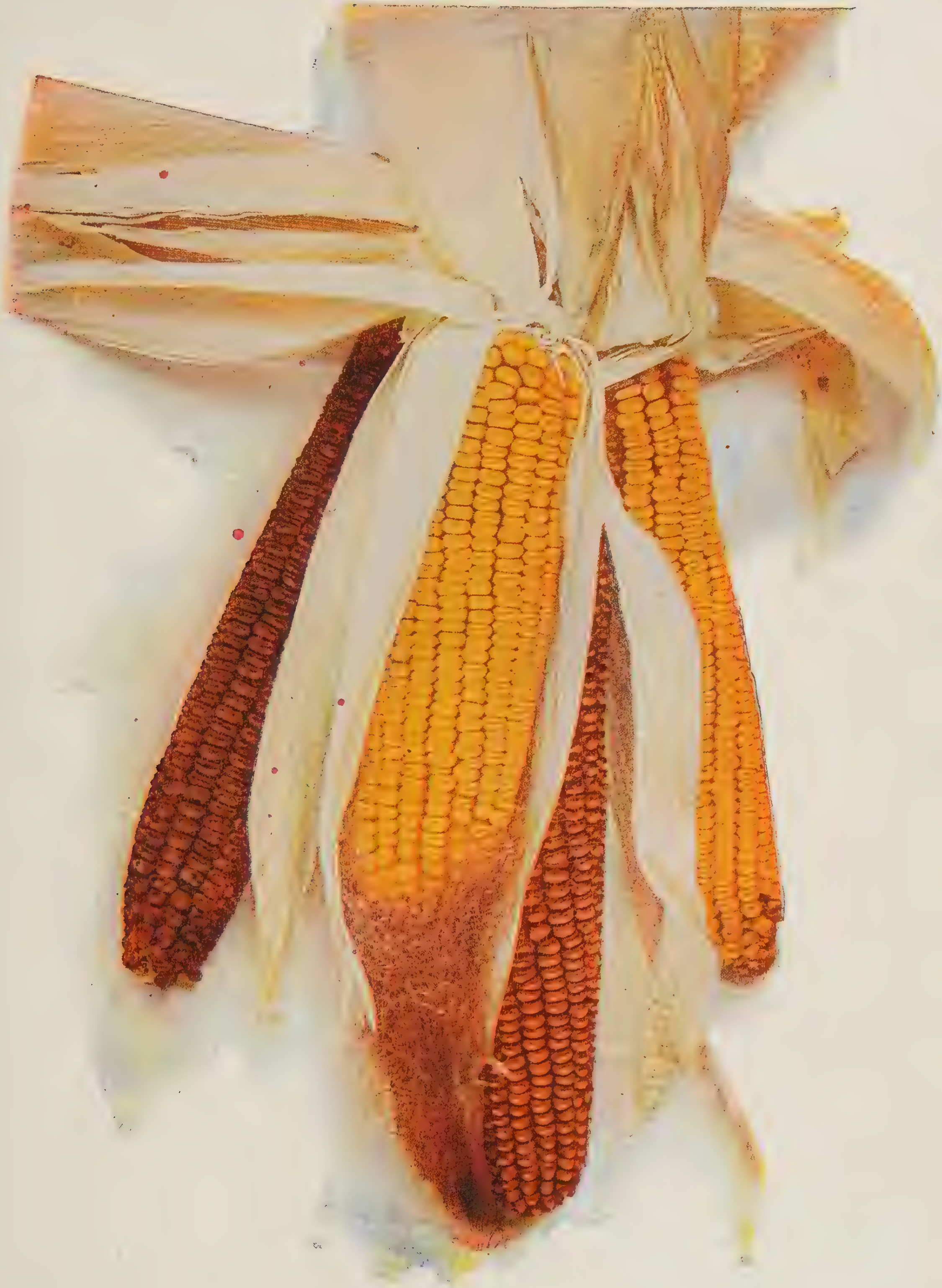

CORN OR MAIZE.

The annual production of corn in the United States exceeds 2,560,000,000 bushels, which is about twice as much as is produced in all the other countries of the world combined. The value of this enormous product is about $1,500,000,000, nearly twice the value of the gold output of the world, and more than the total value of the product of gold and silver. The states of Iowa, Illinois, Kansas, Nebraska, Texas, Ohio, Oklahoma, and Missouri are the leading corn-producing states of the Union, though a number of others take high rank. The Mississippi valley is the greatest corn-producing region in the world. It is grown profitably in many parts of Canada, but the largest yield is in Ontario, where the annual crop is about 10,000,000 bushels. Corn is planted by machinery in the months of April or May and is cultivated until about the first of July, and the crop is gathered in October and November. It yields from fifteen to ninety bushels per acre.

Many species of corn are grown and all are more or less useful for various purposes. *Pop corn* is a small species which is used for roasting, and is so named because the kernels break open when they are exposed to a brisk heat. This is due to the fact that they are enclosed by a tough covering, which prevents the steam from escaping, causing the kernels to burst open and turn the inner side outward. *Sweet corn* is used largely for eating before maturity and for canning on a very large scale. *Flint corn* is a hardy, yellow species which is grown in the regions where the seasons are short, since it matures early and is quite hardy. The common corn, known as *dent corn,* is the staple species for general use. It is used for meal, corn bread, cakes, and hominy. Alcohol, whisky, starch, and other staple products are manufactured from it. The cob is used for making pipes and as a fuel. However, the most important use of corn is for feed for hogs, horses, cattle, and other domestic animals, for which purpose the stalks as well as the grain are used. Since the adoption of the newer process of grinding grain by roller mills, corn meal has been used as an adulteration in wheat flour. The government of the United States sent commissions to Europe at different times for the purpose of stimulating the consumption of corn as a food among the laboring classes of the densely populated states. Corn is native to America. It was introduced by Columbus into Europe, though it is believed that the maize plant was known in Africa and Asia prior to that time.

CORNCRAKE, a name applied to the land rail of England, chiefly because its cry is *crek-crek.* The color is reddish-brown, or brown-gray, and it haunts the corn and grass land in early summer. The crake is a wader about seven inches long. Several species of American birds, especially the short-billed rails, are frequently called crakes.

CORNEILLE (kôr-nāl′), **Pierre,** tragedian, born at Rouen, France, June 6, 1606; died Oct. 1, 1684. He was educated for the law, but ill



568
Opp. 678

CORN.
(Zea mays).
About ½ Life-size.

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success caused him to go to Paris in 1629, where he engaged as a comedian. He entered the field of tragedy in 1635 and a year later produced his most celebrated work, called "Cid," which gave him recognition among the tragic poets. Among his other celebrated productions are "Cinna," which Voltaire pronounced his masterpiece, "Horace," "Polyeucte," and "Rodogune." He is commonly regarded the father of French tragedy and classic comedy.

CORNEL (kôr′nĕl), the name applied to various plants of the genus Cornus, which include about twenty species of shrubs and small trees. The *Cornus mas,* familiarly known as cornel or cornelian cherry, has oval leaves and yellow flowers, and was formerly cultivated as a fruit tree. The fruit is fleshy, oblong in shape, and is eaten raw or used in making preserves. In some sections it is gathered green and pickled like olives. The *cornelian cherry* is native to Europe. The species common to the United States grow in damp woods and their fruit is not properly edible. About eighteen species are found in North America, some of which thrive as far north as central Canada. These plants are known locally as dogwood.

CORNELIA (kôr-nē′lĭ-ȧ), a celebrated Roman woman of the 2d century B. C., the daughter of Scipio Africanus the Elder and of Aemilia. She was the mother of Tiberius and Gaius Gracchus, two famous tribunes, and of Cornelia, the wife of Scipio Africanus the Younger. Though the mother of twelve children, only three of them lived to adult age. They were carefully trained under her supervision and it is related that she referred to them with the words, "These are my jewels," when asked to show her personal ornaments. The base of her monument, which is now in the Capitoline Museum, Rome, bears the inscription, "Cornelia, Mother of the Gracchi."

CORNELIUS (kôr-nå′lė-o͞os), **Peter von,** modern painter, born at Düsseldorf, Germany, Sept. 23, 1783; died March 6, 1867. He began painting at the early age of nine years. In 1811 he went to Rome, where he studied the works of Michael Angelo and Raphael, working in conjunction with Overbeck and Schnorr. His excellent successes were the means of founding a new school of German art and reviving fresco painting. Some of his most famous works were done at Munich, where he painted a series of frescoes based on the legendry of Greek heroes and gods. Among others, he produced a series of New Testament scenes from the incarnation to the judgment, the latter being among the largest and most celebrated frescoes in the world. He painted the "Four Riders of the Apocalypse," in Berlin. Cornelius attained eminence by the spirit of his genius as well as by his excellent painting, largely because many others followed in the same and similar lines. The later years of his life were spent in Berlin, where he was engaged by the King of Prussia. His "Hagen Sinking the Niebelungen Hoard," in Berlin, and his "The Last Judgment," in Munich, are masterpieces of art.

CORNELL, Alonzo B., statesman, born in Ithaca, N. Y., Jan. 22, 1832; died Oct. 15, 1904. He was the son of Ezra Cornell, became telegraph operator, and in 1868 was made director of the Western Union Telegraph Company. President Grant appointed him surveyor of the customhouse at New York in 1873, which position he resigned on being elected to the State Legislature. He was elected Governor of New York in 1879, after which he became connected with large financial interests.

CORNELL, Ezra, philanthropist, born at Westchester Landing, N. Y., Jan. 11, 1807; died Dec. 9, 1874. In 1828 he settled at Ithaca, where he developed the water power tunnel at Fall Creek. The first telegraph line in America, between Baltimore and Washington in 1844, was established and superintended by him, and subsequently he devoted himself to the establishment of lines throughout the United States. Later he established the Western Union Telegraph Company, and in 1865 founded the university at Ithaca, N. Y., which bears his name.

CORNELL COLLEGE, an institution of learning at Mount Vernon, Iowa, organized in 1857. It is under the direction of the Methodist Episcopal Church, and carries classical, scientific, philosophical, and civil engineering courses. The Bowman, Chapel, College, Conservatory, and Science halls are the principal buildings. The library contains 58,000 volumes. It is coeducational. Cornell College is noted for its high moral and intellectual standards. It has a faculty of forty-six instructors and about 850 students.

CORNELL UNIVERSITY, a coeducational institution of higher learning on Lake Cayuga, near Ithaca, N. Y. It is situated on a hill 300 feet high with a view twenty miles down Lake Cayuga and seventeen miles up Enfield valley. This institution was founded in 1865 as a result of the Federal Land Grant Act of 1862, by which large tracts of public lands were assigned to the states for educational purposes, and received a gift of $500,000 and 207 acres of land for use as a site from Ezra Cornell (q. v.), in whose honor it was named. Through the skillful management of western lands by Mr. Cornell and Henry W. Sage and through gifts the property of the university has been increased to about $22,500,000. It has nineteen main buildings, which include the Rockefeller Hall of physics, the Morse Hall of chemistry, the buildings of the New York State College of Agriculture, the Goldwin Smith Hall of Humanities, the University Library with 750,000 volumes, the Law Library with more than 37,000 volumes, and numerous workshops and machine shops. About 150 State scholarships (free tuition) are awarded annually to residents of the State of New York by competitive examination.

Eighteen undergraduate scholarships valued at $400 each and forty graduated scholarships and fellowships of the total value of about $16,000 are distributed annually. The faculty consists of 1,044 professors and teachers. In the years 1925-1926 it had an attendance of 6,225 students for all departments, which is about the average annual enrollment.

CORNET (kôr'nĕt), a metallic wind instrument of the trumpet class, furnished with valves and stoppers. The name formerly applied to it was *cornopean.* Its tone is very agreeable and it is used largely in military bands and orchestras. A number of classes and forms are in general use, of which the cornet-à-piston, a French term signifying a cornet with pistons, is the best known. It is so named from the small pistons which are moved by the fingers in playing.

CORN HARVESTER, a machine for harvesting corn, fitted with a cutting apparatus and a device for binding the stalks into bundles or sheaves. The cutting apparatus differs from that of a reaping machine in that the knives move more slowly, and a balance wheel is utilized to maintain their uniformity in speed. The device used in binding is quite like that of an ordinary harvester, and it is usually fitted to bind the sheaves with sisal or manila twine. The machine ordinarily employed cuts one row of standing corn. The stalks are carried to the binding frame, where the bundles or sheaves are bound and then pushed to the side of the machine and dropped on the ground in such a position that the horses will not step upon them when the next row of corn is cut. Corn cut in this way is bound in small bundles or sheaves, which are afterward set up to form shocks. Other corn harvesters are employed when the grain has matured, and these both husk the corn and gather the leaves and husks for fodder, or they merely strip the ears of their leaves and by an elevator carry them into a wagon, leaving the stalks and husks on the field as waste material.

CORNING (kôr'nĭng), a city of Steuben County, New York, on the Chemung River, about seventeen miles northwest of Elmira. It is on the Erie, the Lackawanna, and the New York Central railroads. The noteworthy buildings include the public library, the city hall, the high school, and the Corning Free Academy. Among the manufactures are railroad cars, flint glass, cigars, machinery, and clothing. It has electric lights and street railways, waterworks, and other modern municipal facilities. It was incorporated as a village in 1849 and as a city in 1890. Population, 1905, 13,515; in 1920, 15,820; in 1925, 15,722.

CORN LAWS, the laws enacted by the British Parliament for the regulation of the trade in grains, both the exports and imports. The exportation of grain was prohibited in many European countries during feudal times with the view of causing a lower price in food products, but this policy worked a hardship upon the agricultural classes of England, and Parliament passed a law in 1436 which permitted exportation when the price of grain fell below a certain limit, though duties were still charged upon the exports. Subsequently the law was amended so as to provide a sliding scale of charges on imports, and these remained in force until the popular agitation of 1846, when Sir Robert Peel declared himself in favor of a repeal of the corn laws. The agitation was very intense under the leadership of Bright and Cobden, who were supported by the Anti-Corn Law League, and in June of that year an act was passed which provided for the gradual abolition of duties. The importation of grain was made entirely free in 1869. It has been a matter of controversy between protectionists and free traders whether the effect of the repeal measure has proved beneficial, and the former point to a decline in agriculture as a consequence of the policy, but the loss is probably more than equaled by the growth in commerce and manufacturing enterprises.

CORNPLANTER, a half-breed Indian of the Seneca tribe, chief of the Six Nations, born in 1732; died Feb. 18, 1836. He was the son of John O'Bail, a white trader and pioneer. In the war between the French and English he sided against the latter, and gave efficient support to the colonies during the Revolution. After the war he was friendly with the United States and displayed much dignity, intelligence, and moral aptitude. His death occurred in Warren County, Pennsylvania. A monument was erected to his memory by the State of Pennsylvania.

CORNWALL (kôrn'wa̤l), a port of entry and the capital of Stormont County, Ontario, sixty-six miles southwest of Montreal. It is on the Saint Lawrence River, the Cornwall Canal, and the Canadian National and the New York Central railways. Among the features are the courthouse, the public school, and the Lacrosse Club building. The manufactures include cotton and woolen fabrics, flour, paper, and machinery. It has public waterworks and other improvements. Population, 1921, 7,382.

CORNWALLIS (kôrn'wŏl-lĭs), **Charles, Marquis of,** soldier, born in London, England, Dec. 31, 1738; died Oct. 5, 1805. He was the son of the first Earl of Cornwallis, served with distinction in the Seven Years' War, and was made major general at the outbreak of the American Revolution, serving with distinction under Clinton and Howe. In 1780 he was given independent command of a thousand men in South Carolina, and in the same year he defeated Gen. Gates at Camden. The following year he fought against Gen. Greene at Guilford Court House, N. C., and was besieged in Yorktown, where he surrendered on Oct. 17, 1781. He was made Governor General of India in

1786, and probably saved India to the English by his victories over Tippoo Sahib. Returning to England, he was made marquis in 1794 and appointed Lord Lieutenant of Ireland, and was again made Governor General of India in 1805. He ranks as one of the most intelligent and able generals sent to America, being much superior to both Howe and Clinton, and was popular with the colonists on account of his dislike of the British system of taxation.

COROLLA (kȯ-rŏl′lȧ), the inner circle or set of leaves of flowers, usually bright colored. It is composed of leaves called *petals,* which surround the part that bears the fruit. Some flowers have a whorl of leaflike organs intervening between the corolla and the stamens, which are considered an appendage of the former and are prominent in some flowers, as in the daffodil.

CORONA (kȯ-rō′nȧ), in astronomy, a halo surrounding the moon when it is seen projected against the disk of the sun in a total eclipse of the latter luminary. Some scientists suppose it to be the atmosphere of the sun, which at other times is invisible, but this view is not generally accepted, since an atmosphere in the ordinary sense could not exist at so great a distance above the surface of the sun. Astronomers now generally regard it to be the prototype of the terrestrial auroras.

CORONATION (kŏr-ȯ-nā′shŭn), the ceremony or act of crowning a sovereign, as a king or emperor, at which he is invested with royalty. See **Crown.**

CORONATION CHAIR, the throne used at the coronation of kings in England since the time of Edward I. It is kept in Westminster Abbey, where the coronation ceremony takes place. This chair has the famous *Lia Fail,* the Stone of Destiny, beneath the seat, which was used in crowning the kings of Scotland. According to tradition, it is the stone that was used by Jacob as a pillow (Gen. xxviii., 11), and was taken by Tarra to Ireland in the 5th century, whence it was brought to Scotland and afterward to England.

CORONATION GULF, an inlet of the Arctic Ocean, located between Mackenzie and Victoria Land. It receives the inflow of the Coppermine River from the south, and extends as Bathurst Inlet toward the southeast. Dease Strait connects it with Victoria Strait on the northeast, and northwest of it is Dolphin and Union Strait. Within its confines are many islands.

COROT (kȯ-rō′), **Jean Baptiste Camille,** landscape painter, born in Paris, France, July 26, 1796; died Feb. 22, 1875. His first work was that of a clerk in a dry goods store and later he began the study of art. At first his progress was slow, but fame and wealth awaited him. His landscapes are true to nature and to produce them he studied the rivers, mountains, lakes, and various sceneries at sunrise and by moonlight. He possessed ability to convey to canvas figures and scenes true to nature in many minute details. Among his most celebrated works are "Macbeth," "The Dance of the Nymphs," "The Baptism of Christ," and "The Flight into Egypt."

CORPORATION (kôr-pȯ-rā′shŭn), a corporate body empowered by law to act as a single individual and having a common seal. There are two classes of corporations—aggregate and sole. An *aggregate corporation* consists of two or more persons incorporated according to law in a society which is kept up by a succession of members, either perpetually or until it is dissolved by mutual consent or limitation. A *sole corporation* consists of a single individual and his successors, organized to perpetuate an office or function which cannot be done in the personal or bodily capacity of any man. For instance, the title to certain church property in Massachusetts is vested in a sole corporation composed of the pastor of the church. In transferring land to a corporation of this class the deed or instrument of conveyance must include the words "and his successors." The office of king or bishop in England is a sole corporation, for the reason that the office is regarded perpetual, and continues to exist though the possessor may die.

Aggregate corporations are under general law of two classes—public and private. *Private corporations* are organized for the purpose of conducting business, societies, coöperative associations, manufacturing, hospitals, colleges, and other enterprises. Organized in this way, the members forming the corporation are individually exempt from liability of the corporation, only the property of the corporation being subject for indebtedness of the organization. However, in some instances the personal liability extends to the amount of the capital stock owned by the individual stockholder. A corporation may sue and be sued as a single individual. The great railroad, telegraph, telephone, banking, insurance, and other companies are organized on a corporate basis. The several states and provinces have laws regulating the formation of corporations. They supervise their organization and fix a minimum to be paid upon the capital stock at the time the organization is formed. Private corporations adopt articles when effecting an organization, in which the capital, indebtedness, privileges, and powers are limited by agreement.

Public corporations are those organized for the government of towns, cities, counties, provinces, and states. Another class of public corporations are those that have for their object the improvement and maintenance of public parks, cemeteries, and similar institutions. It is customary to adopt written by-laws for the government of corporations by the board of directors, who are elected by the members of the corporation. These by-laws may be changed under certain conditions, but must comply with the provisions and requirements of the articles of incorporation. The business of a corporation is managed primarily by the board of directors, who act principally through the officers, including the president, vice president, secretary, treasurer, etc.

CORPUS CHRISTI (kôr′pŭs krĭs′tī), a festival in the Roman Catholic Church held in honor of the body of Christ. It is observed on the Thursday after Trinity Sunday. It was first celebrated in 1241 at Liège by the canons of Saint Martin and was recommended in a bull issued by Pope Urban IV. in 1263, which was afterward confirmed by the council of Vienna. The name is also applied to a college at Cambridge, England.

CORPUS CHRISTI, a city and the county seat of Nueces County, Texas, on Corpus Christi Bay, about 200 miles southwest of Galveston. It is on the Southern Pacific, the Missouri Pacific, and other railroads, has a good harbor, and is the seat of a large trade in fish, oysters, cotton, and cereals. The noteworthy buildings include the county courthouse, the high school, and the customhouse. It has a canning factory, machine shops, and cigar and tobacco factories. Corpus Christi was settled in 1849 and incorporated in 1876. Population, 1900, 4,703; in 1920, 10,522.

CORREGGIO (kŏr-rĕd′jô), **Antonio Allegri,** painter, born at Correggio, Italy, in 1494; died March 5, 1534. He was the son of a wealthy family, the nephew of an artist, and thus enjoyed many privileges in preparing for his life work. Among the first of his celebrated productions are the paintings of a saloon in the convent of Saint Paolo at Parma, in 1518. He began the decoration of the Parma cathedral in 1522, and here painted "The Assumption of the Virgin," in which the Madonna is borne to heaven by a throng of angels, where she is met by the Saviour. This exquisite production is regarded his masterpiece, but equal grace is shown in his painted figures, nymphs, and goddesses. He was able to put charms and gaiety into his paintings and was a master at blending light and shadow. Among his best productions are the altar pieces in the churches of Saint George, Saint Francis, and Saint Sebastian and the pictures representing the "Marriage of Catharine," "Saint Jerome," "Night," and several Madonnas. His "The Holy Night," in the Royal Museum, Dresden, is greatly admired.

CORRELATION (kŏr-rē-lā′shŭn), in pedagogy, the mutual or reciprocal relation of studies, or the act of bringing under relations of union, correspondence, or interaction. Both Froebel and Herbart regarded unity as the important law in education and both wrote much on the subject, making it a fundamental law in their systems. Recent educators have generally supported this principle, and have sought to direct teaching with the view of more fully utilizing the law of association. For instance, the reading lessons are chosen with a view of throwing added light upon contemporaneous lessons in history, botany, and geography. In this way these and similar lessons are made more serviceable in the school course.

CORRIGAN (kŏr′rĭ-ga̤n), **Michael Augustine,** Roman Catholic prelate, born in Newark, N. J., Aug. 13, 1839; died May 5, 1902. He was educated at Mount Saint Mary's College, where he graduated in 1859. Later he studied theology at the American College of Rome and was ordained priest in 1863. The following year he was made professor of dogmatic theology and sacred scriptures in the seminary of Seton Hall College, South Orange, N. J., of which he became president in 1868. Five years later he was appointed Bishop of Newark, in his administration of which office the number of churches were increased and several charitable institutions were founded under his direction. In 1885 he became Archbishop of New York. He was not only a devout and earnest Christian worker, but also a scholar of high attainments.

CORROSIVE SUBLIMATE (kŏr-rō′sĭv sŭb′lĭ-māt), the bichloride of mercury, prepared by heating mercuric sulphate with dry sodium chloride. It is a white crystalline solid, very poisonous, and is used to preserve both vegetable and animal substances. Surgeons employ it as an antiseptic spray and to clean and sterilize their operating instruments.

CORRY (kŏr′rĭ), a city of Erie County, Pennsylvania, ninety miles southwest of Buffalo, N. Y., on the Erie and the Pennsylvania railroads. The noteworthy features include the State fish hatchery, the high school, and a number of mineral springs. It has flouring mills, iron mills, and door, lumber, and sash factories. In the vicinity are valuable deposits of oil, coal, and natural gas. The surrounding country is agricultural. Corry was settled in 1860. Population, 1900, 5,369; in 1920, 7,228.

CORSAIR (kôr′sâr), a pirate or the vessel used by pirates, applied chiefly to the freebooters of the Barbary States. The Corsairs were commissioned by princes to attack the merchant ships of foreign nations and for many years were a scourge on the Mediterranean. In 1800 Capt. Bainbridge sailed to Algiers to pay a tribute to the dey on behalf of the United States, but war was declared against Tripoli the following year and their capital was bombarded in 1804. Algiers declared war against the United States in 1815 on account of a disagreement in regard to the tributes paid, but Commodore Decatur appeared with a large fleet and compelled the dey to sign a treaty. Subsequently the Corsairs were annihilated by the European governments.

CORSICA (kôr′sĭ-kȧ), or **Corse,** an island in the Mediterranean, belonging to France, and forming a department of the same name. It is

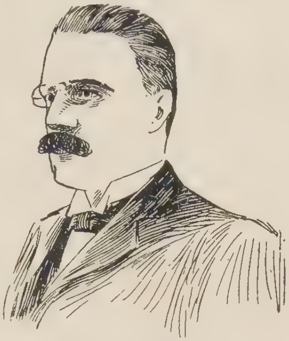
110 miles long and 52 miles wide. The area is 3,367 square miles. It is traversed by a number of rugged ranges of hills and mountains, but has tracts of merchantable forests. Monte Rotondo, the culminating peak, has an elevation of 8,620 feet and is crowned with perpetual snow. Many of the rivers have their sources in the mountain ranges, the principal streams being the Golo and the Tavignano; the former is navigable for boats. The soil is fertile in the river valleys and on the coast region, and produces many kinds of cereals, grasses, and fruits. Mineral oil and timber are the chief sources of wealth. The minerals include marble, iron, lead and petroleum. Large interests are vested in rearing sheep, horses, cattle, mules, and goats. The fisheries are a source of considerable profit. Ajaccio, celebrated as the birthplace of Napoleon, is the seat of government. Bastia is an important city.

Corsica was colonized by the Phoenicians and named Cyrnos. It was conquered by the Romans, who gave it the present name. After the decline of Rome it passed to the Goths, was conquered by the Saracens, and taken by the Genoese in the 15th century. France secured dominion over it in 1766. It became independent in 1794 and two years later was again made a part of France, to which country it still belongs. The industries are not in a high state of development, but several railroads have been constructed and other modern improvements are causing a change toward greater production, both in agriculture and manufacture. Population, 1922, 291,160.

CORSICANA (kôr-sĭ-kä′nȧ), a city in Texas, county seat of Navarro County, fifty-two miles southeast of Dallas, on the Trinity and Brazos Valley Railroad and the Texas Electric Railway. It is surrounded by a fertile agricultural country, which is rich in petroleum, gas, and coal. Among the chief buildings are the public library, the State orphan asylum, the courthouse, and the Odd Fellows' widows and orphans' home. The manufacturing industries include iron foundries, flouring mills, oil mills, machine shops, and cotton compresses. It has good public schools, pavements, electric lights, street railways, and many fine edifices. Population, 1900, 9,313; in 1920, 11,356.

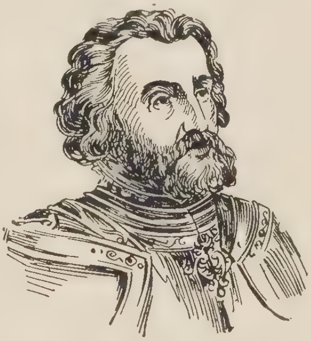
CORT, Henry, inventor of the process of puddling and rolling iron, born in Lancaster, England, in 1740; died in 1800. He entered business at Gosport, where he built iron works, and was a student of the methods of improving iron manufacture. He was ruined in the business by the unfortunate selection of a partner. The government recognized his service and granted him a pension of $1,000 a year.

CORTELYOU, George Bruce, public man, born in New York City, July 26, 1862. He graduated at Hempstead Institute, Long Island, in 1879, and subsequently at Georgetown University. In 1896 he was given a degree at Columbian University. From 1883 until 1885 he was general law reporter in New York City, was for four years principal of preparatory schools in that city, and in 1889 began public service by engaging as clerk to the New York post office inspector. President McKinley made him his secretary in 1900, in which position he was retained by President Roosevelt until 1903, when he became the first Secretary of Commerce and Labor. He resigned in 1904 to serve as chairman of the Republican national committee in the presidential election, and in 1905 entered the Cabinet as Postmaster-General. Two years later he was made Secretary of the Treasury, serving until 1909.


GEORGE BRUCE CORTELYOU.

CORTES (kŏr′tĕs), the national legislature of Spain and Portugal, consisting of an upper house and a chamber of deputies. The upper chamber in both countries is composed partly of hereditary peers and partly of elective members. The deputies of the lower chamber are elected in Portugal for a term of four years and in Spain for five years.

CORTEZ (kŏr′tĕz), **Fernando**, conqueror of Mexico, born in Medellin, Spain, in 1485; died Dec. 2, 1547. He was educated for the profession of law, but afterward entered the military service. At the age of nineteen he went on a tour to San Domingo and soon joined Velásquez, with whom he distinguished himself in the expedition against Cuba. Velásquez was governor of Cuba and intrusted the conquest of Mexico to Cortez in 1518, and soon after sought to revoke it, fearing the bravery and ability of this young warrior would deprive him of the credit of the enterprise. However, he maintained his command against the wishes of Velásquez and started with eighteen horses, ten cannon, 700 Spaniards, and eleven vessels upon his important and daring mission.


FERNANDO CORTEZ.

Soon after Cortez landed he fought the Battle of Tabasco and captured Donna Marina, who became his interpreter with the Mexicans.

Those of his army who were friendly with Velásquez wanted to turn back, but he won the leaders by assuring them that success would surely crown his efforts. He burned his ships in order to induce the others to fight with greater bravery, and left no resource for safety except victory by the sword. He founded Vera Cruz, marched to Tlascala, which he conquered, and, taking several thousand Tlascalans as allies, started for the city of Mexico. He reached the capital on Nov. 8, 1519, and was greatly enchanted by the magnificent city of 300,000 people, finding there excellent castles, bridges, aqueducts, and other public improvements.

Montezuma, the Mexican monarch, was friendly to the Spaniards, but after a week he was put in irons and carried to the Spanish quarters. The Mexicans organized to repel the invaders by placing the brother of Montezuma in command. Soon after armed engagements followed, covering a period of nearly a year, in which 100,000 Mexicans were slain, but the country was finally subjugated. Cortez returned to Spain in 1528 and was made captain general, but was not given the position of governor of New Spain, as Mexico was then known. The governorship fell into the hands of a weak ruler greatly to the disappointment of Cortez, who returned to Spain in 1540, reporting the discovery of the peninsula of California. When Charles V. entered upon his famous expedition to Algeria in 1541, he was accompanied by Cortez, and, after being refused the commandership of the army whereby he promised to conquer Algeria, he exclaimed, "I am a man who has given you more provinces than your ancestors have left you cities." On returning to Spain he entered private life and spent the remainder of his time in solitude. He ranked as a passionate but patient man, sometimes cruel, but religious. He was held in high esteem by his soldiers for bravery and ability, though cruelty has been ascribed to him in many of his ventures.

CORTLAND (kōrt′la̭nd), county seat of Cortland County, New York, about thirty-six miles south of Syracuse, on the Lehigh Valley and the Lackawanna railroads. The chief buildings include the courthouse, the public library, an academy, and a State normal school. Among the manufactures are corsets, furniture, automobile trucks, wire, wall paper, and burial caskets. The municipal utilities include waterworks, street lighting, pavements, and street railways. It was settled in 1792 and incorporated in 1829. Population, 1925, 13,879.

CORUNDUM (kō-rŭn′dŭm), an alumina mineral found native in a crystalline state. This class of minerals includes a number that are highly prized as gems. Pure corundum ranks next to the diamond in hardness and its value depends upon the color. Sapphire is a blue species; ruby is red, emerald is green, amethyst is purple, and topaz is yellow. The star sapphire, known also as the *asteriated* sapphire, presents a six-rayed opalescent star. Species that have a dark color and possess opaque qualities are known in the market as corundum, while those of a granular formation are designated emery. Deposits of emery occur in Canada, at Chester, Mass., and in Asia Minor. Other species of corundum are widely distributed in all the continents.

CORWIN (kŏr′wĭn), **Thomas**, statesman, born in Bourbon County, Kentucky, July 29, 1794; died in Washington, D. C., 1865. He removed at an early age with his parents to Ohio, where he was brought up. He was elected to Congress in 1858 and in 1860. The following year he was appointed minister to Mexico by President Lincoln, but, on the arrival of Maximilian, returned to Washington and practiced law. He ranked as the leading statesman of his time, and was keen in oratory and powerful as an advocate.

COSGRAVE, William T., public man, born in Dublin, Ireland. He took little part in public affairs before 1916, although he was active as a leader among the local Sinn Fein supporters. About this time he joined others in a movement to set up a republican government.

Although Cosgrave had been imprisoned and condemned to death along with others, he became a strong influence and was made the president of the executive council of the Irish Free State. This position is usually spoken of as the presidency of Ireland, but it corresponds more nearly to that of a prime minister.

He visited Canada and the United States early in 1928. Everywhere he was received with friendly applause and greeted kindly by leading citizens.

COSHOCTON (kō̍-shŏk′tŭn), county seat of Coshocton County, Ohio, on the Muskingum River, twenty-five miles north of Zanesville. It is on the Wheeling and Lake Erie and the Pennsylvania railroads and on the Ohio Canal. The first settlement was made in 1811 and it was incorporated in 1833. Population, 1920, 10,847.

COSMOGONY (kŏz-mŏg′ō̍-nȳ), from the Greek *kosmos,* world; and *gonē,* generation; an investigation of the origin or creation of the universe. The theories of this science are represented under three general classes: 1. The world as having existed in its present form from eternity. 2. The matter but not the form of the world as having existed from eternity. 3. Both the matter and form of the world having been created by a spiritual cause. The theory that the universe has existed in substantially its present form from eternity has long been accepted by some writers. It was embraced by a number of ancients and was supported by Aristotle. The theory that the matter but not the form of the world existed from eternity prevailed quite generally among various ancient philosophers. They proceeded to reason that no substance or body could have been made out of nothing, and thought that the elements existed in a state or condition known as *chaos.* Under modifications and changes covering long periods of time, the elements of the chaos were united and began to take on the form and conditions now manifest. After many periods or ages the present form resulted. The advocates of this theory held and still hold that changes go on continually, and that they are as rapid in modern times as they were in any period of the history of the world. This theory in various modified forms was held by the Assyrians, Babylonians, Phoenicians, Egyptians, and other ancient peoples.

The theory that a spiritual cause brought the world into existence is held by the Jews, Christians, and other classes, and is taught in the book of Genesis in these words: "In the beginning God created the heavens and the earth." This theory differs from the second in that it does not hold to the eternity of matter. Having been created in the beginning, it is held that destruction and annihilation will cause it to cease existence in the end. On the contrary, the theory that matter is eternal presumes its continual endurance in the future as well as its existence forever in the past. The elements always existing may change in form by various combinations and movements, but cannot be destroyed or annihilated.

COSSACKS (kŏs′săks), a race of people which became known in Western Europe in the 10th century, when they inhabited the eastern and southeastern parts of Russia. They are thought to be a mixture of Tartar and Caucasian races, though their origin is not clearly established. They bear a close resemblance to the Russians. Their government was originally a kind of democracy with a chief or *hetman* as their ruler. They maintained both civil and military organizations, and were noted for their skill and daring in warfare. In the 15th century they fought against the Turks and Tartars, and were employed by Poland and Muscovy to guard the outposts of Russia. Later their democratic institutions gradually disappeared, when they were absorbed by the Russian dominion, under which government they pay no taxes, but instead render military services. The period in which they are subject to military duty extends from the age of eighteen to fifty, and each man is obliged to furnish his own horse.

Cossack cavalry has rendered the Russian Empire valuable services in many emergencies. The Cossacks were effective during the retreat of Napoleon after the burning of Moscow, when they inflicted serious damage to his army, as well as in the wars against Turkey and on numerous other occasions. They have rendered excellent services as scouts and skirmishers. In military service they wear a distinct uniform of dark green. Their principal rendezvous, called Tcherkask, was located on the Don in 1570, but owing to overflows, New Tcherkask was founded in 1805, which is now the capital of the province of the Don Cossacks and constitutes a government of Russia. It has an area of 63,532 square miles and a population of 3,125,718. In industry and intelligence the Cossacks are superior to the average Russian. Having supported the Czar in the war, they reluctantly joined the revolution in 1917.

COSTA (kŏs′tȧ), **Sir Michael,** composer and conductor, born in Naples, Italy, Feb. 4, 1810; died April 29, 1884. He studied music under Zingarelli at the Conservatoire of Naples and in 1828 began to sing and conduct in public festivals. In 1830 he was appointed conductor of music in the Italian opera, London, where he had a successful career until 1847, when he resigned to become conductor of the Royal Italian Opera at Covent Garden. Queen Victoria knighted him in 1869 and the King of Württemburg bestowed upon him the Royal Order of Frederick. His oratorios include "Eli" and "Naaman."

COSTA RICA (kŏs′tȧ rē′kȧ), a republic of Central America, located between Nicaragua and Panama. It is bounded on the north chiefly by Nicaragua, east by the Caribbean Sea, southeast by Panama, and west by the Pacific. The area is 21,500 square miles. Much of the surface is elevated and mountainous. The Talamanca Range of the cordillera of the Isthmus of Panama traverses the interior and includes a number of lofty volcanic peaks, reaching an elevation of 12,700 feet. Irazú and Turrialba, the former 11,500 and the latter 11,350 feet high, are active volcanoes. The western coast is indented by several extensive inlets, of which the gulfs of Dulce and Nicoya are the most important. Columbus discovered the region on his fourth voyage. It became free from Spain in 1821, and has since been a republic. A number of rivers drain the interior, among them the Trinidad, San Juan, Macho, and Dulce. A large portion of the surface along the coasts and in the valleys is exceedingly fertile. Owing to various altitudes, the climate is divided into three zones. The torrid zone lies below 3,000 feet; the temperate, between 3,000 and 7,500 feet; and the colder zone, above 7,500 feet, where frosts are frequent.

The principal industry is agriculture, the two most important products being coffee and bananas, but all cereals and fruits are successfully cultivated. There are productions of gold, silver, iron, copper, coal, and mineral oil. The foreign trade is largely with the United States, Germany, and Great Britain. The exports exceed the imports, the former having a value of $9,550,500 and the latter, $7,850,500. Railroads have been constructed by the government and under grants to European capitalists. Tramways and street railways are maintained in the larger cities, while the telegraph and telephone lines have a large mileage. San José is the capital. Other commercial cities are Cartago, Alajuela, Puntarenas, and Heredia. Limón and Puntarenas are the most important seaports.

The government of Costa Rica is vested in a president, whose term is four years, a legislature of one department, and a national judiciary. Education is compulsory. The common schools are supplemented by several institutions of higher learning. Roman Catholic is the state religion, but all denominations are granted liberty of conscience. About 3,200 Protestants and 350 Buddhists are in the country. Immigration, manufacturing, and agriculture are encouraged by a public policy under governmental supervision. In general the social and economic conditions are decidedly the best found in the Central American republics. Spanish is the official language, but only a portion of the people are of purely European descent.

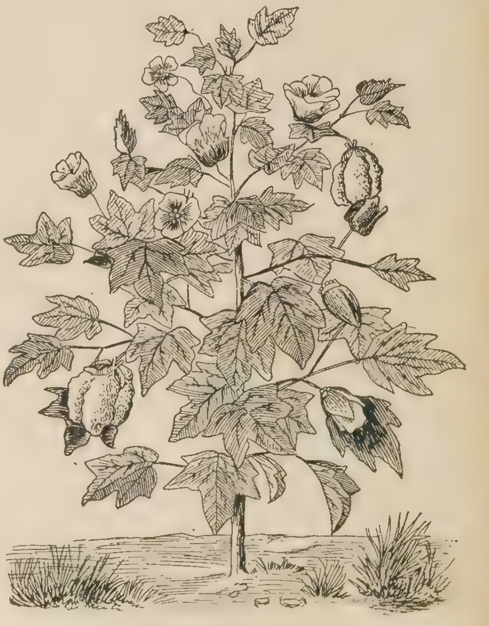
Columbus visited the region included in Costa Rica in 1502. The first permanent settlement was made in 1530. It became free from Spain in 1821 and was a part of the Republic of Mexico until 1823, when it became a part of the United States of Central America. Since 1848 it has been an independent republic, with the exception of a brief time in 1897, when it was a constituent member of the Greater Republic of Central America. The foreigners number 6,295 and are chiefly from Spain and Germany. Population, 1920, 344,995.

COSTER (kŏs′tẽr), **Lourens**, inventor and printer, born in Haarlem, Holland, about the year 1370, died in 1440. It is claimed that he was the first inventor of movable type. At first he constructed letters cut out of the bark of the beech tree and employed them for his own amusement and for writing short sentences. Later he discovered a glutinous ink which did not spread readily in using, and with it succeeded in printing entire pages with characters and cuts. After printing several matters in this way, he replaced the wooden forms by types cast of pewter, which he found more durable and better suited to the purpose. It is claimed he kept his invention a secret, owing to the danger of being punished by the clergy, to whom manuscript writing was exclusively intrusted. After his death a German named Johann Gensfleisch secured most of the types and matrixes and took them to Mentz, where they were made public. Some writers credit the Gutenberg family, of which Johann Gensfleisch was probably a member, with the invention of printing. However, the honor of Coster is still held in remembrance by his native town, where a monument has been erected to perpetuate his memory. A number of specimens of early printing alleged to have been done by him are preserved in various places, notably in his native town.

COTES (kōts), **Sara Jeanette Duncan**, writer of novels and travels, born at Brantford, Canada, in 1863. She was educated at the Collegiate Institute and began writing for the *Canadian Monthly* of Toronto. She wrote largely for Canadian newspapers and periodicals from 1883 to 1888, including the Toronto *Globe* and the Montreal *Star.* In 1888 she made a tour of the world in the interest of the Canadian Syndicate. In 1890 she married Edward Everard Cotes and resided for some time at Calcutta, India, where her husband was engaged as scientist for the East India Company. Among her productions are "A Social Departure," "An American Girl in London," "The Story of Sunny Sahib," "Daughter of To-day," and "Vernon's Aunt."

COTOPAXI (kō-tō̂-păks′ḗ), the most celebrated volcano in the world. It is located in the Andes of Ecuador, about thirty-two miles from Quito. The earliest eruptions on record occurred in 1532 and many have since been noted. Among the most remarkable are those of 1744, 1768, and 1864. During several of the eruptions the sounds were heard at a distance of 500 miles and ashes were carried 125 miles. Outbursts are attended by smoke and flames and large quantities of ashes are expelled. The volcano is crowned with perpetual snow. It was first ascended by Wilhelm Reiss in 1872, who estimated the height of the northwest peak at 19,500 feet and the peak toward the southwest at 19,430 feet.

COTTON (kŏt′t’n), the name applied to the fibers that surround the seeds of the plants belonging to the genus *Gossypium,* commonly called cotton plants. These plants are native to tropical regions, but they are cultivated extensively within the belt lying between latitudes 35° north and 35° south of the Equator. They



Cotton, showing flowers and bolls.

(Opp. 686)

PICKING COTTON ON A PLANTATION IN THE SOUTHERN STATES.

are shrublike, have lobed leaves, mostly yellowish flowers, and a celled capsule which bursts open when ripe and liberates a quantity of black seeds covered with the cellular fibers. Several species are grown in the United States. The short fiber cotton has fibers about an inch long and the long fiber, about two inches. The former is known as *upland* and the latter as *Sea Island* cotton. In quality the Sea Island cotton is the best. It is cultivated upon the lowlands in a number of the Southern States and on the islands adjacent to the coast.

Cotton has been grown since immemorable times in history. It is spoken of in the writings of Herodotus as growing in India and its fibers being used in the manufacture of cloth. It is mentioned by Aristobulus, one of Alexander's generals, and is referred to a number of times by Pliny. The Arabians made cotton goods in the time of Mohammed, about 627 A. D., and his followers introduced them into Africa and Spain. By the 14th century they had spread to Italy, and afterward came into use in the whole of Europe. Cotton fiber is mentioned in English history as early as 1436, when it was used on a small scale, but in 1736 it began to be made into cloth by machinery invented by Louis Paul. Cotton goods are among the leading staples of the world, and are manufactured extensively in most of the large industrial centers. In the United States the leading manufacturing centers are at Manchester and other cities of New England.

The cotton plant was found native by Columbus in the West Indies and in South America. The early Mexicans used cotton cloth extensively. Cotton seed was brought to Georgia in 1786 and the first cotton mill in America was erected two years later at Beverly, Mass. The United States produces about 13,500,000 bales of cotton annually, which is about two-thirds of the world's product. In 1928 the world's crop was reputed at 22,942,500 bales. The bales are made by machinery and are held in position by hoops. They weigh about 515 pounds. Texas is the leading cotton State. Others taking high rank are Mississippi, Georgia, Alabama, North Carolina, South Carolina, Louisiana, and Arkansas, though it is produced in large quantities in a number of other states. The principal supply of cotton, outside of the United States, is secured in India, Egypt, Russia, China, Brazil, Mexico, the West Indies, and the Asiatic islands of the Pacific Ocean.

Cotton is cultivated in fields like corn, the method differing somewhat. The ground is plowed in the spring and the seeds are drilled or planted about three feet apart, the plants appearing above the ground in about eight days. The young plants are cultivated and weeded, this being required two or three different times. After the plants flower no further cultivation is needed, and the seeds ripen after a period of about seventy days. Cotton is gathered within eight days after coming to maturity in order to prevent tarnishing. The gathering is done by picking the cotton fibers from the pods or bolls by hand into baskets or bags hung from the shoulders of the pickers, which is done several times during the picking season, as the bolls do not all ripen at the same time. The crop is spread out to dry as soon as it is secured. When sufficiently dried, the cotton is passed through machinery by which it is separated from the seeds. It was formerly separated from the seeds by hand. The invention of the cotton gin in 1793 by Eli Whitney greatly revolutionized, cheapened, and lessened the labor. By this machine it is separated rapidly from the seeds by means of teeth projecting through slits in the side of the chamber in which the seed cotton is placed. It is then baled and made ready for shipment to the manufacturer.

At the factory it is spun into cotton cloth, or it is mixed more or less with silk, wool, linen, and alpaca to form various fabrics. The early cotton-spinning machines were of rude construction. Among the earliest are Hargreaves' spinning jenny and a water frame made by Arkwright. In 1779 Crompton invented a machine propelled by a mule, while in 1785 the Cartwright power loom and Watt's steam engine were applied to cotton spinning and weaving. The machinery employed at the present time for cleaning, pressing, spinning, and weaving cotton has reached a high state of perfection. It is propelled largely by water, steam, or electric power. The consumption of cotton in manufacture in the United States is very extensive, and large exportations of the raw material as well as manufactured products are made to all portions of the world. Raw cotton is exported chiefly to Great Britain, Germany, France, Italy, and Canada. The exports of manufactured goods aggregate about $27,500,000 per annum, while the domestic consumption is much larger.

The cotton stalks are used in the manufacture of pulp, from which a good grade of writing paper is made. A fine class of oil is manufactured from cotton seed. It is useful for food and enters largely into the production of lard and fine grades of manufactured butter. Cotton-seed cake is a valuable food for domestic animals. The cotton acreage of the United States is about 28,000,000. In 1920 the total number of active spindles in the world was reputed at 153,332,971, of which 29,395,191 were in the United States. The chief uses of cotton goods are for wearing apparel, bedding, and carpets. Among the principal pests to the cotton plant are the boll moth and the boll weevil. The *boll moth* deposits its eggs on the under side of the leaves, where they hatch in about three days, and the larva, known as the *boll worm,* is very destructive to the plant. The cotton boll weevil is a beetle with an elongated head. It punctures the bolls of the cotton plant to lay its eggs within, where they produce white maggots, which do much damage. Another pest, the *redbug,* or *cottonstainer,* is suctorial and drains the sap from the bolls.

COTTON, John, clergyman, born in Derby, England, Dec. 4, 1585; died Dec. 23, 1652. He studied at Trinity College, Cambridge, and gained a high reputation for learning. While at Cambridge he became inclined toward the Puritan faith and in 1633 was summoned to appear before Archbishop Laud, but escaped and came to Boston, where he was chosen pastor of the first church organized in that city. He continued as pastor until his death, wielding a powerful influence over affairs both secular and ecclesiastical. His writings are very numerous, including about fifty volumes, all of which were printed in England. He conducted an extended controversy with Roger Williams, who was expelled from Massachusetts with his approval, and he was an opponent to the views of Anne Hutchinson. Among his books are "The Keys to the Kingdom of Heaven," "A Treatise Concerning Predestination," "A Brief Exposition Upon Canticles," "Set Forms of Prayer," and "A Treatise of the Covenant of Grace."

COTTON, Sir Robert Bruce, antiquarian, born in Benton, England, Jan. 22, 1571; died May 6, 1631. He was educated at Cambridge University and became interested in the collection of rare books and manuscripts. His collection of ancient manuscripts was very valuable, since it included a large number that had been widely scattered at the time Henry VIII. dissolved the monasteries. He was knighted in 1603 and was made a baronet in 1611. Sir John Cotton, his great-grandson, bestowed the library on the nation, and in 1753 it was removed to the British Museum.

COTTON FAMINE, the name applied to the failure of the cotton industry in England, which occurred in 1861-65, when the Civil War was raging in the United States. The war caused the supply of raw cotton to be shut off and thus compelled the closing of the manufactories. About 300,000 English laborers were thrown out of employment and 2,000,000 people reduced to the verge of starvation. The government relieved the distress somewhat by granting charitable aid.

COTTON GIN, a machine for separating the seeds from cotton fibers. It was invented by Eli Whitney in 1793. See **Cotton; Whitney, Eli.**

COTTON SEED, the seed product of the cotton plant. From it the cotton batting, cotton-seed oil, and cotton-seed meal are manufactured. The cotton batting is made from the lint that clings to the seed after passing through the cotton gin, while the other two products are made from the seeds proper. Cotton-seed meal is a valuable food product for horses and cattle, while the cotton-seed oil, known in the market as cottolene, is wholesome as food for table use. Cotton-seed oil is employed extensively as a substitute for lard, linseed oil, and sperm oil. It is used for lubricating, soap making, treating leather, and divers other purposes. The annual value of cotton-seed oil exported from the United States aggregates $15,000,000, while the value of lint and oil cake is almost as large.

COTYLEDON (kŏt-ĭ-lē'dŭn), the first leaf, or one of the first two leaves, developed in a plant. In exogens two such leaves are present in the embryo in every plant, while in endogens there is but one. The two cotyledons on exogens are always opposite, while in endogens the second leaf developed is alternate with the first. From these well-known characteristics have been developed the three primary divisions of the vegetable kingdom—the dicotyledons, monocotyledons, and acotyledons.

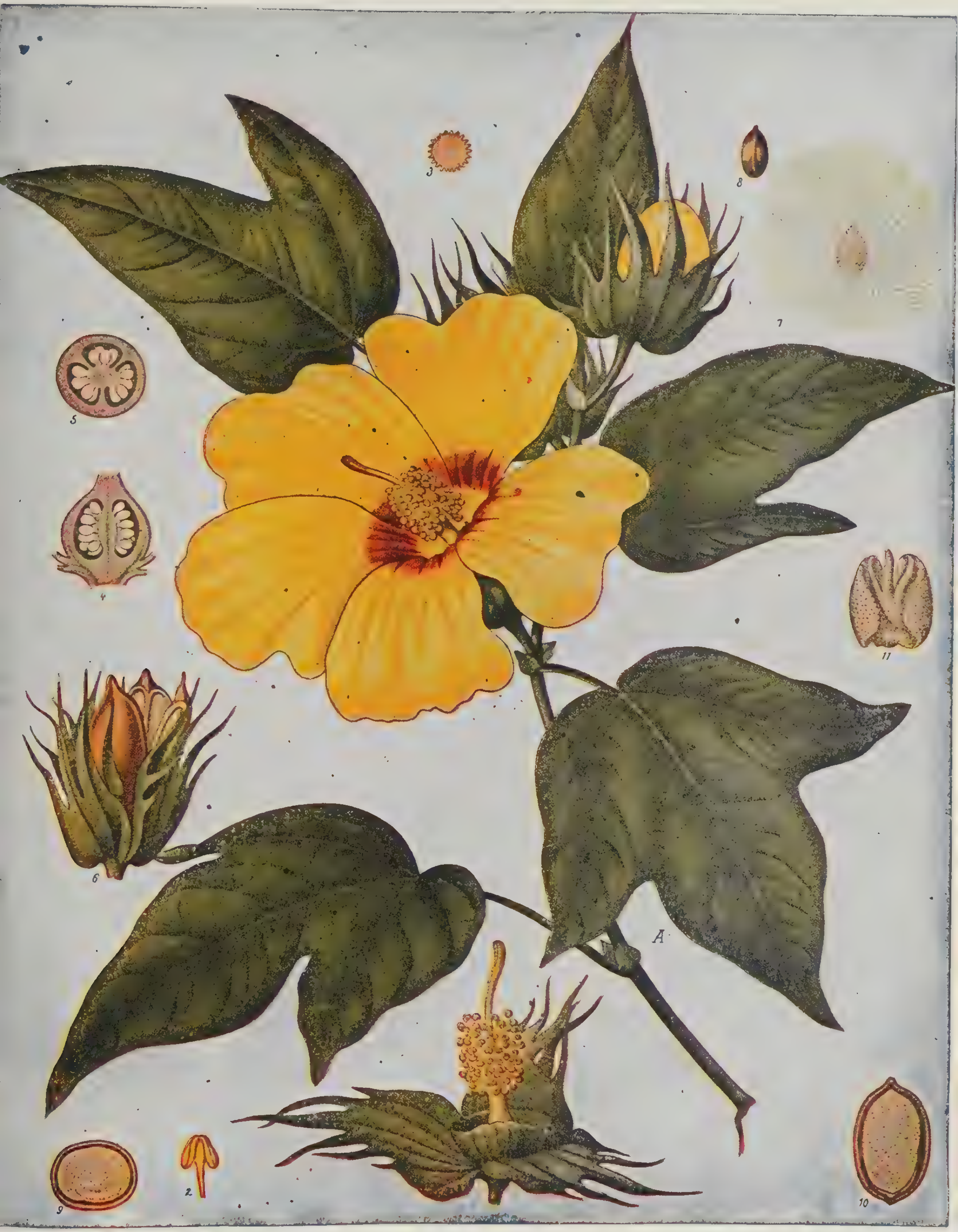
COUCH, Darius Nash, soldier, born at South East, N. Y., July 23, 1822; died in 1897. He graduated at the West Point Military Academy, served with distinction in the Mexican War, and in 1847 was brevetted first lieutenant for gallant service at Buena Vista. In 1863 and 1864 he had command of the department of Susquehanna, took part in the Battle of Nashville, and resigned from the service at the close of the war. He was an unsuccessful candidate on the Democratic ticket for Governor in Massachusetts in 1869, and subsequently held a number of military offices in Massachusetts and Connecticut.

COUÉ (kū'á) **Emile,** pharmacist, born at Troyes, France, in 1857; died at Nice, July 2, 1926. After studying in Nancy and Paris, he established an institute in Paris. He developed a theory of healing known as a system of autosuggestion, which he demonstrated by lecturing, visiting Canada and the United States in 1922 and again in 1923. His system of healing became known as Couéism. The methods of Couéism are based upon the theory that anything, if possible, no matter how difficult, may be accomplished if we persuade ourselves to never cease in persistent endeavors to secure its realization. More than any other, he emphasized the need of thinking, "Every day, in every way, I am getting better and better."

COUES (kouz), **Elliott,** naturalist, born in Portsmouth, N. H., Sept. 2, 1842; died Dec. 25, 1899. He graduated from Columbian University, Washington, D. C. in 1861, entered the United States army as medical cadet in 1862. Among the most celebrated of his works are "Key to North American Birds," "New England Bird Life," "Birds of the Colorado Valley," "Field Ornithology," and "Demon of Darwin."

COUGAR (kōō'gär), the name given to the puma in Brazil, formerly called the American lion, and now often mentioned as the American panther. Formerly it was found throughout a vast region of both North and South America, but it has been destroyed in all of the former, except in its most southerly portions.

COUGH (kaf), a sudden and violent expul-



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SEA ISLAND COTTON

Gossypium barbadense.

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1. Flower.
2. Anther.
3. Pollen grain (enlarged).
4. Longitudinal section of ovary.
5. Cross section of ovary.
6. Seed pod opening at the top.
7. Seed and fibers.
8. Seed without fibres.
9. Cross Section of seed.
10. Seed (enlarged.)
11. Embryo.

(Opp. 688.)

sion of air from the chest, caused by the relapse action of nervous or gastric disorder, or by irritation in the air passage. Coughing occurs when the source of irritation is in or below the posterior fauces, and sneezing when the irritating cause acts on the nasal mucous membrane. It may be dry, as in the first stage of pleurisy; or humid, as in certain stages of pneumonia and in advanced consumption. The act of coughing may be single and with distant intervals, or long continued, as in whooping cough and bronchial catarrh. In croup and whooping cough it has a metallic ring. As a general rule coughing may be taken as a symptom of disease.

COULTER (kōl'tẽr), **John Merle,** botanist, born in Ningpo, China, Nov. 20, 1851. His parents were American and provided for his education at Hanover College, Indiana, and subsequently he studied at Harvard University. In 1891 he became president of Indiana College, served as president of Lake Forest University in 1893-96, and in the latter year accepted the head professorship of botany in the University of Chicago. He is the author of several standard works on botany and contributed to a number of periodicals and works of reference. Among his books are "Handbook of Plant Dissection," "Manual of Rocky Mountain Botany," "Manual of the Botany of Western Texas," and "Synopsis of the Flora of Colorado."

COUNCIL BLUFFS, a city in Iowa, county seat of Pottawattamie County, on the Missouri River, opposite Omaha, Neb. It is on the Chicago and Northwestern, the Illinois Central, the Chicago Great Western, the Union Pacific, the Chicago, Milwaukee and Saint Paul, the Chicago, Burlington and Quincy, and other railroads. Next to Sioux City, it is the most important city of western Iowa, and is connected by several bridges and electric street railways with Omaha, Neb. The chief buildings include the county courthouse, the Carnegie Library, the Chieftain Hotel, the Federal building, the Lincoln High School, the Park building, and the Iowa School for the Deaf. Bayliss and Fairmont parks are popular public grounds. The manufactures include agricultural implements, machinery, carriages, engines, ironware, clothing, and earthenware. Its location at the western termini of a large number of railroads and connection with principal Pacific coast lines makes it an important jobbing and commercial city. It has good municipal facilities, such as street railways, electric lights, pavements, waterworks, and sewerage. The city was named from a council held on its site by Lewis and Clark with the Indians in 1804. It was settled in 1846, when it was known as Kanesville, but it was incorporated as Council Bluffs in 1850. Population, 1905, 25,231; in 1925, 39,795.

COUNTERFEITING (koun'tẽr-fĭt-ĭng), to make something in imitation of an article of value without legal authority and with a fraudulent intent. The act of uttering counterfeit coin, bank notes, or other currency is a felony punishable by fine or imprisonment. The government, as a safeguard against counterfeiting, has its paper currency engraved with designs that can be reproduced only at great expense. In addition, several secret marks and combinations of letters and figures are employed and paper and ink of a peculiar kind are used. The counterfeiting of coins consists of imitating the genuine by using a cheaper or comparatively worthless metal.

COUNTERSIGN (koun'tẽr-sīn), the signature of a secretary or other public officer to attest that a writing has been signed by a superior. In military affairs the countersign is a watchword given daily by the commander of an army, in order that the soldiers on guard may distinguish whether those wishing to pass are friends or enemies. Those who are unable to give the countersign are not permitted to pass.

COUNTY (koun'tȳ), a name derived from a tract of land subject to a count or earl, and now applied to a division next smaller than a state or province. The name *parish* is applied to these divisions in some states and *shire* is the term used in England. A county has such officers as sheriff, attorney, auditor, treasurer, coroner, clerk, and commissioners, and in some cases a judge. In most states or provinces the roads, poor, local elections, and other interests are under supervision of the county. The county is divided into townships or parishes.

COUPÉ (kōō-pȧ'), a four-wheeled vehicle with a low body, drawn by one horse and provided with a seat for two passengers within and a separate outer seat for the driver. Coupés are closed carriages and are sometimes called cabs and broughams. In continental Europe the name is applied to a compartment in a railway carriage.

COURT (kōōr), **Antoine,** clergyman, born at Villeneuve de Berg, France, Mar. 27, 1696; died June 15, 1860. He descended from a family of peasants who adhered to the Protestant church, and at the early age of seventeen began to speak at the meetings held secretly. It was his ambition to build up the Protestant faith, which was strenuously persecuted in France at that time. In 1714 he formed a congregation in Provence, and the following year organized the first synod of the so-called Church of the Desert. He founded a school for the education of Protestant ministers at Lausanne, where he labored diligently until his death. His writings are quite numerous, of which the most important is "An Historical Memorial of the Most Remarkable Proceedings Against the Protestants in France from 1744 Until 1751."

COURT FOOL, the name given in ancient and medieval times to the professional jesters employed at the courts of nobles. It was their duty to enliven the wealthy nobles, particularly at table, by jests and witty sayings. A jester employed by the King of Persia is mentioned in the writings of Plutarch, but the office of court fool attained its highest reputation in the Middle Ages, when it was customary to employ them, not only for court service, but they became an adjunct in the apartments occupied by the queens and dauphins. The English kings had court jesters up to the time when the last Stuarts ceased to reign, after which the practice of employing them was abandoned. Court fools were clothed in peculiar costumes, made up of gay colors and unusual ornamentation, and they were permitted to use free speech in ridiculing the follies and vices of their contemporaries. They were abolished in France about the time of the Revolution, and ceased to be an adjunct in the courts of Germany and Russia about the same time. Shakespeare uses the court fool in "As You Like It" and "King Lear."

COURTHOPE (kōrt'ōp), **William John,** author, born in Sussex, England, June 17, 1842. He was educated at Harrow School and Oxford University, where he graduated as master of arts in 1877. He received a prize in 1863 for a poem on "The Tercentenary of Shakespeare," and a gold medal for one on "The Genius of Spenser." He was founder and joint editor of the *National Review* and contributed largely to other publications. His eminent scholarship was displayed in writing many literary productions of high quality. He was appointed professor of poetry at Oxford University. Among his best productions are "The Paradise of Birds," "The Liberal Movement in English Literature," "History of English Poetry," "Works of Alexander Pope," and "Addison."

COURT-MARTIAL (kōrt-mär'shąl), a court authorized in the military and naval service, with jurisdiction to try all offenders in the army or navy. Such a court has no jurisdiction over a citizen who is not employed in the military service. It is made up of from five to thirteen commissioned officers and is presided over by a judge advocate.

COURTS, the tribunals established by law for the administration of public justice. They are composed of one or more judges or justices, and such other officers as the law authorizes. The courts are designated as either *civil* or *criminal,* depending upon the character of the business which they transact. In the civil courts all civil cases are tried, while criminal courts have jurisdiction of public offenses, as felonies and misdemeanors. In some instances the so-called *district courts* have jurisdiction of both civil and criminal cases. Each State of the United States has a supreme court made up of a number of justices, while the United States Supreme Court has the highest jurisdiction regarding cases which involve questions of national jurisdiction. The cases that may be tried in the United States Supreme Court involve issues between states, between individuals and the United States, and between the United States and a particular State. Most of the State supreme courts consist of from five to seven justices, while the United States Supreme Court consists of a Chief Justice and eight associates. In the states they are in most instances elected by popular vote, while those of the United States Supreme Court are appointed by the President with the consent of the Senate.

The Supreme Court of the Dominion of Canada as at present organized was constituted by a statute enacted in 1906. It is composed of a Chief Justice and five puisne judges, and has appellate civil and criminal jurisdiction throughout the Dominion. Each Province has a supreme court, which is presided over by a supreme judge and a number of puisne judges. Locally, as in the United States, there are *district* and *county* courts and courts presided over by the *justices of the peace.* The towns and cities have *municipal* or *police* courts. In England the House of Lords constitutes the high court as well as the supreme legislative body.

COUSIN (kōō-zăn'), **Samuel,** engraver, born at Exeter, England, May 9, 1801; died May 7, 1887. He was apprenticed to S. W. Reynolds, an engraver in London, in 1815, and ten years later began engraving on his own account. His early success was due to his superb production, "Lady Ackland and Her Family." In 1835 he was elected an associate engraver of the Royal Academy, and twenty years later was placed in full membership. His efforts brought good returns, and he was able to bequeath $75,000 as a fund to assist indigent artists. His most noted engravings include "Sir Robert Peel," "Portrait of the Queen," "The Strawberry Girl," "Penelope Boothby," "Marie Antoinette in the Temple," "Bolton Abbey in the Olden Time," and "Time and Mitherless Bairn."

COUSIN, Victor, writer and founder of the Eclectic school of philosophy, born in Paris, France, Nov. 28, 1792; died June 13, 1867. He was educated at Lycee Charlemagne and was made professor at the Sorbonne in 1815. Later he was appointed to several other important institutions of learning, visited Germany in 1817, and subsequently lectured extensively. He was made a member of the council of public instruction in 1830 and a peer of France in 1840. He accepted the office of minister of public instruction in the cabinet of Thiers. His public career ended with the revolution in 1848. His teaching had much influence on public thought in Germany, England, America, and other countries as well as in France. Among his best known books are "History of Philosophy" and "Truth, Beauty, and Good."

COUTURE (kōō-tür'), **Thomas,** artist, born at Senlis, France, Dec. 15, 1815; died March 31, 1879. He attracted early attention by his famous paintings, notably on account of their brilliant coloring. His "Troubadours" sold for 55,000 francs in 1844. He was long an influential member of the Legion of Honor, attained eminence by his numerous portraits of eminent men, and exhibited a number of his productions in America. Among his principal works are "The Baptism of the Prince Imperial," "The Return of the Troops from the Crimea," and "Two Volunteers of the French Revolution."

COVENANT (kŭv′ē̇-nănt), a stipulation in writing between two or more parties whereby the truth of certain facts is set forth, or an agreement is made to bind one or more of the parties to do or not to do some specific act. The Old and New Testaments contain a number of references to covenants between God and man, which were made by God on certain conditions of repentance, obedience, and faith on the part of man. After the deluge a covenant was made with Noah, and another was concluded for Abraham and his posterity, which was renewed to Isaac. The covenants of the Scriptures which are especially recognized by evangelical writers are the *Covenants of Works* and the *Covenants of Redemption.* All of the former are substantially promises of blessings upon the basis of obedience, while the latter are the New Testament promises of blessings upon the basis of faith in Jesus Christ.

COVENANTERS (kŭv-ē̇-nănt′ẽrz), a term applied to a large portion of the people of Scotland in the 16th and 17th centuries, who bound themselves by covenants to defend the Presbyterian Church against the Episcopal and Catholic churches of Great Britain. Four of these covenants were made. The first was subscribed at Edinburgh Dec. 3, 1557; the second, at Perth, May 31, 1559; the third was the National Covenant and was signed at Edinburgh, Feb. 28, 1638; and the fourth was written by Alexander Henderson and accepted by the Scottish general assembly on Aug. 17, 1643. The last-mentioned covenant was subscribed to by the English Parliament at London on Sept. 25, 1643, and was regarded a league between Scotland and England. Obligation to it was absolved in 1661 and its renewal was prohibited, for the reason that the liberty of the church was deemed safe.

COVENT GARDEN (kŭv′ẹnt), a square of London, famous for its extensive market of flowers and fruits. It formerly belonged to the abbot and monks of Westminster. In 1831 the Duke of Bedford, the proprietor of the ground, erected the present buildings. These buildings include a flower market roofed with glass and a market house which covers three acres of ground. Near it is the Covent Garden Theater, built in 1859, which occupies the site of the former Royal Italian Opera House.

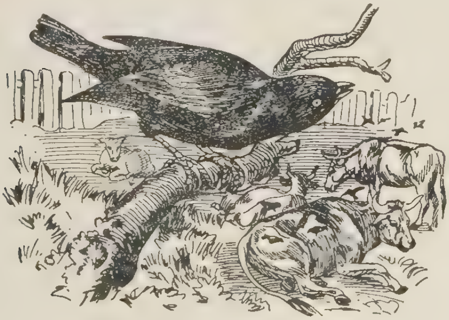
COVENTRY (kŭv′ẹn-trў̆), a city in the County of Warwick, England, eighty-five miles northwest of London. It was the seat of Parliament during the reign of early monarchs and the residence of a number of them at various times. Saint Michael's church, built in the period between 1230-1395, has a spire 200 feet high. Another excellent edifice is Saint Mary's Hall, erected in the 14th century. It has exquisite tapestry, stained windows, and fine frescoes. A Benedictine monastery was founded at Coventry by Earl Leofric and his wife, Lady Godiva, in 1043. The city is noted for its many historical events, including the story of the trial by battle between the dukes of Norfolk and Hereford, an account of which is given by Shakespeare in his Richard II. Mary, Queen of Scots, was imprisoned here for some time. The city has railroad connections with the principal cities of Great Britain and manufactures of ribbons, bicycles, watches, textiles, and machinery. Among the public utilities are sewerage, public baths, a public library, and electric street railways. It is a brisk market for produce and live stock. Population, 1921, 106,377.

COVENTRY, a town of Rhode Island, in Kent County, twelve miles southwest of Providence, on the New York, New Haven and Hartford Railroad. It is finely situated on the Pawtucket River and has a brisk trade in produce and merchandise. The manufactures include woolen and cotton goods, cigars, clothing, and machinery. Coventry was the home of Nathanael Greene. It was incorporated in 1741. Population, 1905, 5,698; in 1925, 6,379.

COVERDALE (kŭv′ẽr-dāl), **Miles,** eminent divine, born in Yorkshire, England, in 1488; died Feb. 19, 1568. He was educated at Cambridge and became a monk, but changed his religious opinions and worked earnestly in the Reformation. He went abroad as an evangelist in 1532. Three years later he completed his translation of the Bible, which he dedicated to Henry VIII. This Bible was the first to be sanctioned by royal authority in England and is the earliest one printed in the English. The Psalms as translated by Coverdale are still printed in the Book of Common Prayer. He went to Paris in 1538 with the consent of Henry VIII. and Francis I. to superintend a revision of the Scriptures in English, the reason being that work and paper were cheaper and better there than in England. However, the Inquisition interfered, which resulted in the destruction of a large number of copies and some of the material, but the principal portion of the supplies was afterward brought to London. This resulted in bringing out the Great Bible in 1539, called Cranmer's Bible, on account of a preface written by that prelate. Coverdale was elected to the see of Exeter in 1551 but was ejected and thrown into prison two years later, from which he was released in 1555 at the suggestion of the King of Denmark, on the condition that he would leave the country. Coverdale went to Denmark and later to Geneva, where the Geneva translation of the Scriptures was published in 1560 with his assistance. He returned to England on the accession of Elizabeth and in 1564 was appointed to the rectory of Saint Magnus, London. Coverdale ranks among the most eminent divines of England. His letters and works were published by the Parker Society at Cambridge.

COVINGTON (kŭv′ĭng-tŭn), a city in Kentucky, county seat of Kenton County, at the confluence of the Licking and Ohio rivers, opposite Cincinnati. It is on the Chesapeake and Ohio, the Cincinnati Southern, and the Louisville and Nashville railroads, and has connections with other cities by a number of electric railways. The chief buildings include the county courthouse, the public library, the post office, the city hall, and the Roman Catholic cathedral. It has a German orphan asylum, a hospital and foundling asylum, and the Notre Dame Academy. Among the principal industries are flouring mills, cement and brick works, tobacco and cigar works, and furniture, boiler, and machine shops. It has a number of pork packing houses, silk factories, and glass works. The city has an extensive electric street railway system, sewerage, electric and gas lights, paved streets, waterworks, and a large trade. Two bridges cross the Ohio River, one of which is a suspension bridge, 2,255 feet long, erected at a cost of $2,000,000. Covington was settled in 1812 and incorporated in 1834. Population, 1900, 42,938; in 1920, 57,121

COW, the female of the genus bos or ox, of which the bull is the male. It has been bred so as to obtain marked differences in color, size, and utility. Among the best kinds of beef cattle are the Galloway; for general purposes, the Hereford, Durham, and Holstein; and for dairying purposes, the Ayrshire, Jersey, and Guernsey. See **Cattle.**



COWBIRD.

COWBIRD, or **Cow Bunting,** a bird of North America, belonging to the blackbird family. It deposits its eggs, like the cuckoos, in the nests of other birds. Here they are incubated and the young are reared by their foster parents. The cowbird is brownish-black, about seven inches long, and migrates toward the south to spend the winter. In the spring it moves northward into Canada as far as Hudson Bay and in autumn, usually in September, large flocks are seen associated with other blackbirds. It has a tendency to go with cattle, probably to secure the worms and insects which attend the animal.

COWHAGE (kou′hāj), or **Cowitch,** the hairs on the pod of a tropical climbing plant of the bean family, native to the East and West Indies. The hairs are brownish in color, stiff, brittle, and short, and easily penetrate the skin when coming in contact with it. They produce an intolerable itching, which, instead of being relieved by rubbing, is greatly increased. Cowhage is employed in medicine as a mechanical vermifuge, being taken in syrup and honey. The plant belongs to the genus *Mucuna,* but is commonly called cowhage.

COWLEY (kow′lĭ), **Abraham,** poet, born in London, England, in 1618; died July 28, 1667. His education was obtained at Winchester and Cambridge. He secured inspiration at an early age by the poetry of Spenser, and published an edition called "Poetic Blossoms" at the early age of fifteen years. His distinction at Cambridge was based on his elegant style in the translation of the "Davideis," an epic poem in four parts, which he did not fully complete. He was ejected from college in 1643, after securing a degree of master of arts, on account of being attached to the Court party. He followed the queen to Paris in 1646 and corresponded with King Charles in cipher letters. After the Restoration he was disappointed in an ambition to obtain the mastership of the Savoy, and subsequently retired to the queen's lands at Chertsey, of which he secured a lease. Among his best known works are "Mistress" and "Pintarique Odes." Though little read at present, his poetry is regarded equal to Spenser's and Shakespeare's. His brilliancy is of the sort that tends to rise into eminence by high ascent, rather than by a shining luster. Among his works in prose are several essays that rank in sublimity with the works of Milton.

COW PARSNIP (pärs′nĭp), a large plant of the parsnip family, native to the Northern Hemisphere. It is cultivated in the temperate regions of Europe. In Scotland, where it is a rank weed, it is called *kiesh.* The tall branching stems grow to a height of two to five feet and bear white flowers in broad umbels, and the herbage is used as fodder. About fifty species have been classified, of which the *Siberian* is the largest, but its stem is quite coarse. Several species are common to Canada and the United States, and locally they are called *wild celery.* The Eskimos peel the leaf stalks and use them as food.

COWPENS (kou′pĕnz), a village of Spartanburg County, South Carolina, near which the Americans under Gen. Morgan defeated the British under Col. Tarleton, Jan. 17, 1781. Cornwallis sent Tarleton with 1,110 men against Morgan, when the latter took a strong position at Cowpens under the slope of a hill. His militia was stationed in front, the regulars on higher ground, and at the top of the slope was Col. Washington with the cavalry. The British made the attack and met with a deadly volley, after which the regulars opened a stormy fire and followed by a bayonet charge. At the same time the American cavalry struck the right flank of the British and the militia formed again behind the lines and effected a rout. The British lost 230 killed and 600 prisoners, while the American loss was only seventy-two. This battle was one of the most brilliant of the war, when considered in point of tactics.

COWPER (kōō'pẽr), **William**, poet, born at Hertford, England, Nov. 26, 1731; died April 25, 1800. His father was chaplain to George II. and married Ann, the daughter of Roger Donne, who died while William was a child. He was educated at Westminster and studied for the law in London. Though admitted to the bar in 1754, he never practiced. His family connections caused his appointment as clerk of the House of Lords, but he refused to appear for examination at the bar of the House on account of nervousness and resigned his office, and soon afterward became mentally affected. He remained under the care of a doctor at Saint Albans for three years, beginning in 1763, and was restored to health by the efficient treatment of Dr. Cotton. In 1776 he commenced a poem on the "Progress of Error" and in 1781 published "Table-talk, Truth, and Expostulation."

Cowper formed the acquaintance of Lady Austin in 1781, who suggested to him "The Task," persuaded him to translate Homer, and related to him the history of "John Gilpin." He commenced work on "The Task" in 1783 and published it in 1785, together with "Tirocinium," the two appearing in one volume. His translation of Homer appeared in 1791, and this, together with other works, gave him the reputation of being the greatest poet of his day. In 1794 he was again affected with mental weakness and could not successfully carry forward the work of writing. His friend, Mrs. Unwin, also lost her mental faculties, and both were groping under the same difficulties of mental affliction. He was attacked by dropsy in 1799 and died the following year. Cowper greatly beautified the English literature. He added many charms by his epistles and anecdotes and was a charming letter writer. Two of his most delightful poems, "My Mary" and "Address to My Mother's Picture," were written in the last gloomy days of his life.

COWPOX, an acute contagious disease affecting the teats and udder of cows, characterized by slight fever and an eruption of the skin of the affected parts. The matter contained in the vesicles is the vaccine virus used to inoculate the human system as a security against smallpox. It was first introduced for this purpose by Dr. Jenner (q. v.).

COWRY (kou'rȳ), or **Cowrie**, a kind of mollusks found chiefly in the warm seas of the Eastern Hemisphere. Several of the species are noted for the beauty of their shells, which are used extensively in many parts of Southern Asia for money and as ornaments. They differ in value according to the size and the coloring of their surface. Many tons of cowries are gathered annually in the islands southeast of Asia, particularly in the Philippine Islands and the East Indies. Specimens with beautiful markings upon their smoothly polished surface are popular for ornaments to the dress and habitations of both civilized and uncivilized nations.

COWSLIP, the name of several species of plants which belong to the same genus as the primrose and oxlip. There is a close resemblance between the cowslip and the oxlip. The flowers are delicate, possess marked beauty and fragrance, and are general favorites. In color they are greatly variegated, including white, yellow, and rose-colored bloom. The cowslip has a spreading flower cluster, in this respect differing from the common primrose. Its clusters of flowers have been called *fairy cups* for the reason that they were long thought to be the haunts of fairies. Many species of cowslips are well-known plants in Europe and America. One of the American species is known as the *shooting star*.

COW TREE, a class of trees native to the tropical regions, so called from the milky juice which is used as a food. The milky product is not the juice of the plant, but is derived from certain cells found in the stems, known in botany as the laticiferous vessels. It has the appearance of the milk of a cow and is wholesome as a food, and the natives use it in the regions where the trees are indigenous. The cow tree of Guiana and Venezuela grows to a height of 80 to 100 feet and has leathery leaves of a large size. The product is obtained by making incisions in the trunk of the tree.

COX (kŏks), **David**, landscape painter, born at Deritend, near Birmingham, England, April 29, 1793; died June 15, 1859. He was the son of a blacksmith and began the work of a scene painter at an early age. In 1804 he removed to London to study art under John Varley, and in 1813 joined the Society of Painters in Water Colors. He taught drawing in Hereford and several other places a number of years, but after 1827 resided chiefly in London. His early paintings consist mostly of scenery in Wales and England. Faithfulness to nature and accurate treatment of light and shade are characteristics of his productions. They include "Hay Field," "Ulverston Sands," "Bolton Abbey," and "The Vale of Clwyd."

COX, Jacob Dolson, statesman, born in Montreal, Can., Oct. 27, 1828; died in 1900. In 1829 he was taken to New York by his parents, who afterward removed to Ohio. He studied at Oberlin College, taught school and practiced law, and in 1859 was elected to the State Senate. In 1861 he was appointed brigadier general of volunteers for service in the Civil War. He served with McClellan in 1861-62, and subsequently saw service in Ohio and with Sherman in Georgia. After the close of the war he was elected Governor of Ohio as a Republican, became Secretary of the Interior in 1869 and was elected to Congress in 1877, serving one term. In 1881 he was made dean of the law school of Cincinnati University and in 1885 became president of that institution. He published a number of volumes on the military history of the Civil War.

COX, Kenyon, painter, born in Warren, Ohio, Oct. 27, 1856. He studied in Cincinnati and Philadelphia and in 1877 went to Paris, where he received instruction under Gérôme and Carolus Duran. In 1882 he returned to America and was made a member of the Society of American Artists in New York City. His productions consist largely of portraits and figure pieces. A portrait of the sculptor Augustus Saint-Gaudens and a picture entitled "An Eclogue" are his best known works. Specimens of his pictures are in the Library of Congress, Minnesota State capitol, and in many other places. His wife, Louise Cox (b. 1865), has a reputation as a figure painter. He died March 17, 1919.

COX, Palmer, artist and author, born in Granby, Quebec, April 28, 1840; died July 24, 1924. After graduating, he removed to San Francisco, Cal., in 1863, where he contributed to a number of periodicals. In 1875 he removed to New York City. His writings are very numerous and are illustrated by pictures drawn by himself. They include "Squibs of California," "Queer People With Wings and Things," "The Brownies at Home," "How Columbus Found America," "The Brownies in Fairyland," and "The Brownies in the Philippines."

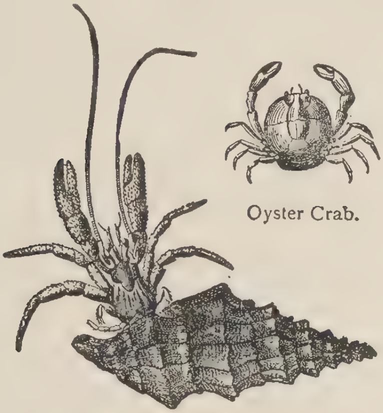
COX, Samuel Sullivan, statesman, born in Zanesville, Ohio, Sept. 30, 1824; died Sept. 10, 1889. He graduated at Brown University in 1846, and became editor of the *Statesman* at Columbus, Ohio, in 1853. Owing to a flowery description of a sunset which he published in his paper, the sobriquet of *Sunset* clung to him through life. In 1856 he became secretary of legation at Lima, Peru, and was a member of Congress from 1857 to 1865. He removed to New York City and was elected to Congress in 1868 and subsequently was reëlected three times. In 1872 he was elected as a Congressman at large for the State and as such served consecutively for ten years. In 1885 he was made minister to Turkey, returned to the United States the following year, and was again elected to Congress and twice reëlected, serving until the time of his death. The life-saving service was founded by him, and he was the author of a number of works on political subjects. His ability as a debater and humorist made him many friends. Among the best known books from his pen are "Why We Laugh," "Eight Years in Congress," "A Buckeye Abroad," and "Three Decades of Federal Legislation."

COXE (kŏks), **Arthur Cleveland,** clergyman, born at Mendham, N. J., May 10, 1818; died July 20, 1896. He studied at the General Theological Seminary, took orders in 1841, and became clergyman the following year. He was rector of Saint John's Church in Hartford, Conn., from 1843 to 1854, and then was called as rector to Grace Church in Baltimore. In 1863 he accepted the rectorship of Calvary Church in New York City, and the following year became assistant bishop of western New York. He succeeded to the position of second bishop of western New York in 1865. He published extensive works in verse and prose, founded the Christian Literature Company, and edited their series of "Saint Augustine on the Psalms" and "Ante-Nicene Fathers." His later works include a poem called "Westminster Abbey" and one entitled "Episcopate of the West." As a lecturer he took high rank and was engaged as such by several institutions, including the University of Michigan and Kenyon College.

COXEY, Jacob Sechler, labor agitator, born in Pennsylvania, in 1854. He commenced his life work at the age of thirteen years in a rolling mill, became owner of a sand quarry at Massillon, Ohio, in 1881, and enlarged his operations by becoming a horse breeder in 1889. At first he supported the Greenback party, but later became a Populist and attended the national convention in Saint Louis. He advocated the issue of $500,000,000 in bonds by the government to be used in promoting good roads and internal improvements. For the purpose of promoting this scheme he marched with the Commonweal army, consisting of 350 men, from Massillon to Washington, D. C. On arriving at Washington he made a demonstration from the steps of the capitol and was arrested for trespassing on the grass. After being lodged in jail, his army dwindled away, but it was imitated in various regions of the country. He was a candidate for Congress for one of the districts of Ohio in 1896.

COYOTE (kī'ō-tē), the prairie wolf common to the plains of the United States and the central part of Canada. In size it ranges between the fox and the ordinary wolf. It has a sharp snout and coarse, yellowish-gray fur mixed with black. The coyote is about forty inches long, with a tail sixteen inches. It has a prolonged howling cry.

CRAB, a class of ten-footed crustacean decapoda, of which the edible crab is a type. They have a short tail, which is folded under the body, short feelers, and a wide shield on the back for protection. In the mouth are several pairs of strong jaws, and the stomach is studded with hard projections that serve for grinding the food. A colorless lymph is propelled to the gills by the action of the heart, the liver is a rich yellow substance, and the edible portions are contained in the front claws, which are much larger than the other legs. Among the widely distributed species are the *oyster crab,* the *hermit crab,* the *blue crab,* and the *spider crab.* The crab is found in the waters near the shore, though there are several species that live on land. A species called the *swimming crab* is a fast runner, burrows in the ground, and is fond of fruits. The claws of the males are much larger than those of the females, and for this reason the former bring the higher price in the market. In a natural state the color is reddish-brown above and whitish beneath; the reddish color seen when in the market is produced by boiling.


Oyster Crab.

HERMIT CRAB.

The larger crabs in warm climates often weigh about ten or twelve pounds. They are caught in immense numbers off the coast, both in Canada and the United States, and are sold on the market as a delicacy. The front pair of limbs does not serve for locomotion, but answers the purpose of defense and for strong claws and pincers. All species of crabs molt periodically, that is, they throw off their calcareous covering. In the molting period the crab is quite helpless for several days, after which a new covering takes the place of the old one. Their claws are easily lost, but grow anew after a short time. The eyes are movable and they are capable of seeing well and at great distances. The land crabs go into the water to spawn. Some species live in fresh water, though the larger crabs are found in the sea and salt waters. Their food consists of dead and living animal matter, but some subsist on vegetable substances, such as the *racer crabs* of the West Indies, which live on the juices of the sugar cane. Crab fishing is an important industry in most countries, particularly in the densely populated regions, where many laborers are employed in crab and other shell-fish fisheries.

CRABBE (krăb), **George,** poet, born in Suffolk, England, Dec. 24, 1754; died Feb. 3, 1832. He manifested a passion for reading at an early age and was decidedly biased toward poetry. After securing an elementary education, he was apprenticed to a surgeon, but developed no liking for the profession, and proceeded to London in 1780 to make a trial of literature. His entire fund consisted of £3, which he soon spent and was threatened with arrest for debts. Applying to Burke for assistance, his troubles were soon alleviated and his needs fully supplied. At the suggestion of this gentleman several alterations were made in his two productions, "The Library" and "The Village," and published in 1781. He became a clergyman, but remained busy as an author. Among his most celebrated productions are "The Parish Register," "The Newspaper," "Tales in Verse," and "Tales of the Hall." He was a tireless worker, ever busy with his pen, and ranked well among the writers of his time.

CRABTREE, Charlotte, actress, born in New York City, in 1847. She began her career as an actress in California at the age of ten years, and in 1860 played successfully in New York and other eastern cities. Her reputation was greatly enhanced by playing as *Little Nell* and the *Marchioness* in "Old Curiosity Shop," which parts she played successfully in 1867. Other rôles in which she attained success were in "The Firefly" and "The Little Detective," in which she won applause from great audiences. Her stage appearance was natural and graceful. She retired from the stage in 1881, after acquiring a fortune. She died Sept. 25, 1924.

CRACOW (krā'kō), or **Krakow,** a city in Poland, on the Vistula River, 256 miles northeast of Vienna. The streets are well improved by grading and stone and asphalt pavements. It has an important river navigation and railroad trade and a line of important manufactures. Among the ancient and noted buildings are a Gothic cathedral, a library with over 300,000 volumes, and several monuments of Polish kings. The monument of Kosciusko is located near the city, on an eminence, and is 120 feet high. It is the seat of a famous university with 2,500 students. The manufactures include clothing, cigars, textiles, leather, machinery, and earthenware. Cracow is well fortified by strong walls. It was the ancient capital of Poland and the residence of the Polish kings. Until 1919 it belonged to the crown of Austria. Population, 1918, 150,318.

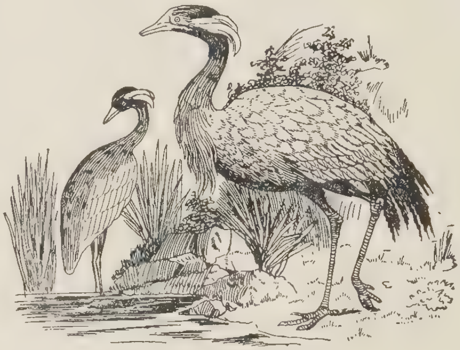
CRAIGIE (krâg'ĭ), **Pearl Richards,** novelist, born in Boston, Mass., Nov. 2, 1867; died in London, England, Aug. 13, 1906. She was taken to England by her parents when an infant. She studied under private tutors and in institutions in Paris and London, and in 1887 married Reginald Walpole Craigie, from whom she was afterward divorced. Her writings are very numerous and she is known chiefly by her pen name of *John Oliver Hobbes.* Among her best known plays are "The Ambassador," "A Repentance," and "Journeys End in Lovers' Meeting." Her other writings include "A Study in Temptations," "A Bundle of Life," "Love and the Soul Hunters," "The Serious Wooing," "Tales About Temperaments," and "The Gods, Some Mortals, and Lord Wickenham."

CRAIK (krāk), **Dinah Maria Mulock,** novelist, born at Stoke-upon-Trent, England, in 1826; died Oct. 12, 1887. "The Ogilvies," her first novel, appeared in 1849 and met favorable reception. The money that came from her early writings was used to support her invalid mother and ten younger brothers. She is best known by her "John Halifax, Gentleman," a work translated into German, French, Russian, Greek, Italian, Spanish, and other languages, and which is regarded among the most popular writings of the last century. Her novels, poems, and essays include forty-six productions, of which the best known are "Mistress and Maid," "Fugitive Poems," "A Life for a Life," and "Agatha's Husband."

CRAIK, Robert, physician, born in Montreal, Canada, April 22, 1829; died in 1906. He studied at McGill University, and in 1854 became house surgeon general in the hospital at Montreal. Two years later he was made demonstrator of anatomy at McGill University, became curator of its anatomical museum in 1859, and held the chair of clinical surgery in that institution from 1860 to 1867. Subsequently he was an instructor in chemistry and in 1889 became dean of the medical faculty, which position he held until 1901. He was honored by being elected a member of many scientific associations. Among his works are "Strychnia in Cholera," "Medical Education," "Nature of Morbid Poisons and Germ Theory of Disease," "Hospital and District Nursing," and Papers on Purpura and Tetanus."

CRANBERRY (krăn'bĕr-rȳ), a plant common to the swampy regions of the Temperate and Arctic zones. The plant is a creeping vine with ovate, evergreen leaves, a terminal single-flowered peduncle, and a berry of a dark red color, about one-fourth of an inch in diameter. Several species are cultivated for the market. They thrive best in natural bogs or swamps that can be drained and flooded by ditches when desired. They are propagated by cuttings set in rows about fourteen inches apart, and the ground is covered by about three inches of sand to retain the moisture of the soil below and permit of greater ease in cultivation. The berries are gathered by hand. Their principal use is for pies and preserves. They are exported in large quantities from the United States, Canada, and Russia.

CRANE (krān), any bird of the genus *grus.* It differs from the storks and herons in having its hind toe higher than the front ones and in caring less about wet and marshy regions. All the species have long legs and a long neck, powerful wings, and a prominent bill, and are of considerable size. The length of the body is about forty-five inches. The plumage is usually ash-gray, but in some species it is white or bluish. Cranes are migratory, passing north in the spring in large wedge-formed flocks, led by single leaders, or in a long single line, and issue a discordant cry. They usually alight for food in daytime and fly continuously by night until their destination is reached. Their nests are made in rushes, in which two eggs are laid. The young are quite helpless and need to be fed for several days. The food consists of insects, worms, roots, snakes, seeds, and small quadrupeds. Their means of defense lies in the bill, which serves as a dagger. The flesh of some species is regarded an excellent food, for which they are hunted. The *crowned crane* inhabits the northern and western portions of Africa. It has a tuft of slender yellow feathers on the head, which it is able to move at will, and is of a bluish, ash-gray color. The *demoiselle crane* has two tufts of feathers formed by an elongation of the ear coverts, and inhabits Central Asia and Africa. The *whooping crane* and *sandhill crane* are native to North America.


CROWNED CRANE.

CRANE, Stephen, novelist, born in Newark, N. J., Nov. 1, 1870; died in Baden, Germany, June 5, 1900. He was educated at the Syracuse University and Lafayette College, where he studied in a desultory manner, and at the age of sixteen years became a newspaper reporter. His first publication was "Maggie, a Girl of the Streets," which had little sale, but was afterward called to public notice by critics and republished. His next work was the "Red Badge of Courage" and attracted no particular attention until it was reprinted in England, when it became exceedingly popular. In it is depicted the career of a raw recruit confronting the shot and shell of the enemy. So vividly is this described that the reader becomes imbued with an extraordinary admiration. He went to Europe and reported the War of 1897 between Greece and Turkey for the newspapers, and afterward reported the war news of Cuba, particularly the campaigns made by the Rough Riders at El Caney and San Juan. These reports were sent largely to the New York *World* and the New

York *Journal.* His books include "George's Mother," "The Monster," "An Old Man Goes A-Wooing," "The Little Regiment," "The Third Violet," and "War is Kind." Though he died at an early age, he was well known to the reading public.

CRANE, Walter, painter and engraver, born in Liverpool, England, Aug. 15, 1845. He first studied under his father, Thomas Crane, a painter of portraits, and subsequently received instruction under W. J. Linton in London. His first work consisted of illustrations in a book entitled "The New Forest," exhibited at the Royal Academy in 1862. He is known extensively as an illustrator of juvenile books in an antique style, but produced many designs in tapestry and for glass windows, and wrote extensively on various subjects of artistic interest. Many medals were awarded to him and he was for some time president of the Arts and Crafts Society of London. His oil paintings include "Birth of Venus" and "Fate of Prosperine." Among his publications are "Claims of Decorative Art," "A Wonder Book," "Queen Summer," and "The Bases of Design." His principal decorations include friezes, panels, and modeled ceilings and fireplaces. He died March 15, 1915.

CRANE, Winthrop Murray, public man, born in Dalton, Mass., April 23, 1853. He attended the public schools and became a manufacturer of paper. In 1897 he was chosen Lieutenant Governor of Massachusetts, serving until 1899, and in 1900 was elected Governor of the State. He was appointed, in 1902, as United States Senator to fill the vacancy caused by the death of George F. Hoar, and in 1907 was elected for a full term. He ranks as an influential legislator and served on a number of important committees. He died Oct. 2, 1920.

CRANIAL NERVES. See **Nerves.**

CRANIUM (krā'nĭ-ŭm), the bony case containing the brain. It is composed of eight bones, the occipital, ethmoid, sphenoid, frontal, two parietal, and two temporal. These bones form a spheroidal inclosure which offers substantial resistance to external violence. The cranium and face constitute the skull (q. v.).

CRANMER (krăn'mẽr), **Thomas,** Archbishop of Canterbury and church reformer, born in Aslacton, England, July 2, 1489; suffered martyrdom March 21, 1556. He descended from a Norman family and studied at Cambridge, where he became a fellow in 1510. His study was largely of the learned languages, the Scriptures, and the writings of Luther, Erasmus, and Le Fevre. He secured the degree of doctor of divinity in 1523 and received an appointment as lecturer in theology. In 1533 he was appointed Archbishop of Canterbury and zealously promoted the cause of the Reformation. His efforts led to the translation of the Bible into English, its reading in the churches, and the vigorous suppression of monastic institutions. He was appointed one of the council of regency to Edward VI. by the will of Henry VIII. He joined the partisans of Lady Jane Grey in the exclusion of Princess Mary from the crown by the will of her brother. When Mary ascended the throne, he was condemned for treason and sent to the Tower. The burning of Latimer and Ridley at Oxford caused him to write six recantations. He was tried on charges of perjury, blasphemy, heresy, and incontinence, was degraded, and burned at the stake. Although having shown weakness in signing the recantations, his courage returned later, and he died protesting innocence and unworthy weakness, showing fortitude in the midst of the flames.

CRANNOGS (krăn'nŏgs), the fortified lake dwellings found in Ireland and Scotland. These fortifications were constructed in about the 9th century, and were discovered in 1813 by George Chalmers, the author of "Caledonia." Several hundred have been located. The weapons and utensils found in them are of stone, bronze, and iron. They consist mostly of swords, knives, axes, daggers, spears, and whetstones.

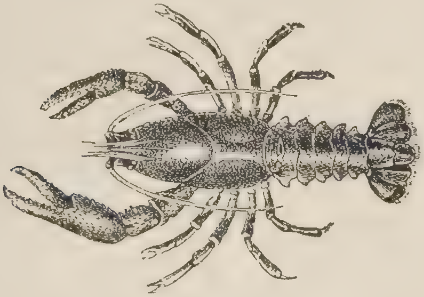
CRANSTON (krăn'stŭn), a town of Rhode Island, in Providence County, on the New York, New Haven and Hartford Railroad. It is a popular residential center of Providence business men, has a number of libraries, and is well supplied with public utilities. Among the public institutions are an almshouse, an insane asylum, a State prison, and an industrial school for boys and girls. The manufactures include cotton and woolen goods, clothing, machinery, wire, hosiery, and brick. The first settlement at Cranston was made in 1638 and its incorporation dates from 1754. Population, 1925, 34,471.

CRAPE (krāp), or **Crêpe,** a delicate transparent fabric, made of raw silk which has been tightly twisted. It is either crisped or smooth, but all kinds of crapes are woven and dyed with the silk in the raw state. The silk used in making crisped crape is spun harder than for the single, or smooth kinds. Gum water is used to stiffen all classes after they are finished. The colors are black and dark brown, and the former is used extensively as mourning apparel. Many countries of continental Europe excel in the manufacture of crape, especially France and Italy. The crapes made by the Chinese and Japanese are white or highly colored, when intended for mourning, but the varieties used in trimming hats and for ladies scarfs are made in standard colors.

CRASSUS, Marcus Licinius, Roman triumvir, born in 115 B. C.; slain in 53. His immense wealth caused him to be surnamed Dives. In 83 he joined the party of Sulla, was elected praetor in 71, and the following year became consul with Pompey, his enemy. While consul he spread 10,000 tables in a feast and distributed a provision of corn for three months. In 60 B. C. he formed the first triumvirate with Caesar and Pompey. He was reëlected consul five years later, gained the province of Syria, and led a campaign against the Parthians, but, misguided by a treacherous Arab, he was defeated and slain.

CRATER (krā'tẽr), the bowl-shaped depression forming the outlet of a volcanic vent. It is generally circular in form and surrounded by a cone of débris. A fissure in the earth is the beginning, through which great volumes of steam and other gases are evolved, the shattered lava forming the volcanic cone. There may be several openings, or the escape may be by long fissure instead of the usual form. The craters of extinct volcanoes often form lakes. The most remarkable one is Crater Lake, in Klamath County, Oregon. It is 6,240 feet above the sea, 2,000 feet deep, and surrounded by great cliffs from 1,200 to 2,000 feet above its surface. Springs are the source of its water supply and it has no outlet to the sea.

CRAWFISH (kra̤'fĭsh), or **Crayfish**, the name of several species of fresh-water crustaceous animals resembling the lobster in appearance. About thirty species are native to America, where they are popularly called *crabs*. They have a long tail, ten jointed feet, and prominent feelers. The body is divided into two parts, the trunk and a long, six-jointed tail. The eggs are fastened to the legs of the mother, from which the young escape and molt several times before reaching maturity, which requires from three to four years. It is thought the molting occurs largely because the shell does not enlarge with the growing body. When the shell comes off the animal is quite helpless and exposed to many dangers, often causing fatal results. Large numbers of crawfish may be seen in sluggish streams and bodies of fresh water. They burrow in the ground near the water, and during the winter live in a semidormant state. Their food consists of worms, insects, small carrion, and the tender forms of vegetation, and they even attack each other for food. They are widely distributed on the continents and islands. The larger species are considered dainty food; the tail and claws being the edible parts. The burrowing habits of some cause damage to levees and milldams on a number of streams, particularly on the Mississippi.



CRAWFISH.

CRAWFORD (kra̤'fẽrd), **Francis Marion**, American writer, born at Bagni di Lucca, Italy, Aug. 2, 1854. His father was the celebrated sculptor, Thomas Crawford. He was liberally educated in America, Italy, Germany, and England. In the last mentioned country he attended Cambridge and then studied two years at Karlsruhe and Heidelberg, Germany, after which he studied Sanskrit at Rome. He went to India in 1879 and published the *Indian Herald* at Allahabad. In 1881 he returned to America, remaining two years, and subsequently he made his home near Sorrento, Turkey. His writings show much power and have been of uniform interest. The style is manly; the originality, marked; and the versatility, surprising. Some of his productions are devoted to critical philology and philosophy, though most of them relate to fiction. Among the best known are "Mr. Isaacs," "The American Politician," "With the Immortals," "Children of the King," "Story of a Lonely Parish," "Casa Braccio," "Marion Darche," "Katherine Lauderdale," "Zoroaster," "Marzio's Crucifix," and "The Ralstons." He died April 9, 1909.

CRAWFORD, Thomas, sculptor, born in New York, March 22, 1814; died Oct. 10, 1857. His early taste for art caused him to carve in wood. When nineteen years old, he entered a studio of monumental sculptors in New York, and the next year went to Rome and studied under Thorwaldsen. He made Rome his home, but paid several visits to his native land. His studio at Rome was attractive and showed proof of his persistent activities. In the latter years of his life he was deprived of his sight from the effects of a tumor. Among his most noted works are the Washington monument at Richmond and the statue of liberty on the dome of the national capitol at Washington. Besides these, he produced "Babes in the Woods," "Orpheus Entering Hades in Search of Eurydice," and a large number of statues of eminent men, including Beethoven and Henry Clay.

CRAWFORD, William Harris, statesman and lawyer, born in Nelson County, Virginia, Feb. 24, 1772; died in Elberton, Ga., Sept. 15, 1834. He was admitted to the bar in 1798 and appointed with Horatio Marburg to revise the laws of Georgia. In 1802 he was elected to the Legislature and four years later became a member of the United States Senate. He declined the office of Secretary of War in President Madison's Cabinet in 1813, but was appointed minister to France and became an intimate friend of Marquis de Lafayette. In 1815 he returned to the United States and was appointed Secretary of the Treasury, serving during both terms of Monroe's administration, after which his name was presented for the office of President. The other candidates were Andrew Jackson, Henry Clay, and John Quincy Adams. Crawford received the support of four states. He returned to Georgia after the election and was made judge of the northern circuit of that State in 1827, holding the office until his death.

CRAWFORDSVILLE, county seat of Montgomery County, Indiana, about thirty miles northwest of Indianapolis, on the Big Four, the Pennsylvania, the Monon, and other railroads. It is surrounded by a fine farming country. The noteworthy features include the courthouse, the public high school, and Wabash College. Among the manufactures are flour, ironware, boilers, clothing, brick, books, machinery, and furniture. It has sewerage and waterworks systems. The first settlement was made in 1822 and it was incorporated in 1865. Population, 1900, 6,649; in 1920, 10,139.

CRAYON (krā′ŭn), a pencil made of chalk, charcoal, or pipeclay, colored with various pigments and used for drawing on paper or other materials. Chalk is used largely in the manufacture of blackboard crayons, such as are in common use in schools, and lampblack and pipeclay supply the chief materials in making black crayons. Litmus, turmeric, and saffron are among the vegetable colors used as materials in making pastel, a mixture of chalk and coloring pigments. Crayon painting is practiced to some extent as an art, its chief advantage being in the facility with which it is executed and the richness in outline and coloring.

CREAM, the light yellow substance which rises to the surface of milk after standing a brief time. It is rich in fat, which ranges from ten to seventy per cent. Good cream for household use contains from eighteen to thirty per cent. of fat. Milk is creamed by two methods, that is by setting and by a separator. In the former the milk is usually placed in shallow pans and the cream rises gradually to the surface by gravity, owing to the fact that the fat globules of the cream are lighter than the water and other constituents of the milk. It requires about twenty-four hours for the cream to rise, but the milk must be set immediately after it is drawn, and the loss of fat by this method ranges from ten to twenty per cent. A better way is to put the milk in cans about eighteen inches deep, which are placed in cold water with a temperature of about forty degrees, which causes the cream to rise more rapidly and completely than under a higher temperature. The cream separator has superseded the shallow and deep setting of milk to a large extent, even among farmers, and is in general use in creameries. In this machine the cream is separated from the milk by centrifugal force, the work being done by a bowl or drum which revolves at the rate of 5,500 to 8,000 times per minute. A good separator well operated separates practically all of the cream from the milk, not more than 0.1 per cent. remaining in the skim milk.

CREAMERY (krēm′ẽr-ȳ), a factory at which butter is made from the milk or cream of cows. Creameries are now operated in practically all sections of the country where dairy farming is profitable. In farming communities they are conducted largely on the coöperative plan, under which the patrons themselves build and operate the plant and share equally in the profits. Under this form of organization the company may or may not buy milk or cream in addition to the product obtained from the stockholders, though usually more or less of the material is purchased. Another form of operating creameries is the plan under which a company or corporation purchases all the material, which is gathered by teams sent out from the plant or is delivered direct from the farms. The value of cream and milk is determined by a tester at the time the products are delivered. Skim milk is a by-product and is either sold or returned to the patrons, who use it to feed pigs and calves. Butter is the chief product obtained from creameries, but in some localities the milk is condensed and canned, and in others cheese is made as a by-product. Colleges of agriculture and government experiment stations have been potent factors in stimulating interest in the manufacture of butter of a high quality.

CREAM OF TARTAR, a bitartrate of potassium, which is obtained from a variety of food products, especially from the tamarinds and grapes. It is contained in the crude tartar or argol which collects as a crystalline deposit upon the bottom and sides of wine casks during the fermentation of the wine. To prepare it for commercial purposes, the argol is dissolved in hot water and the coloring matter is removed by clay or egg albumen, after which the cream of tartar is separated by crystallization. The commercial product is a white crystalline compound, is soluble in water, and contains a small per cent. of calcium tartrate. It is used in making baking powder, in medicine as a purgative, and for various purposes in the arts.

CREASY (krē′sĭ), **Sir Edward Shepherd,** historian, born in Kent, England, in 1812; died in London, Jan. 27, 1878. He was educated at Eton and Cambridge and became a fellow at the latter in 1834. In 1837 he was admitted to the bar, practiced law for more than twenty years, and presided as assistant judge at Westminster court for some time. He was knighted in 1860 and appointed Chief Justice of Ceylon. Among his principal works are "Fifteen Decisive Battles of the World," "History of the Ottoman Turks," "Invasion of England," and "Rise and Progress of the British Constitution."

CRÉCY (krĕs′sĭ), a small town in the department of Somme, France, about 100 miles north of Paris. It is celebrated on account of a battle on Aug. 26, 1346, between Edward III. with 30,000 men and an army of 100,000 French led by the Count of Alençon. The battle resulted in a victory for the English. About 30,000 French were slain, among them the blind King of Bohemia, who was assisting the French army. This battle was one of the earliest in which the English used cannon.

CREDIT (krĕd′ĭt), in economics, the trust or confidence placed by one individual in another, when he assigns money or other property in loan without stipulating for immediate payment. It is a postponement of the payment of a debt to a future time. Credit is given by the party that lends and obtained by the one who borrows. The credit system is based on the confidence the people have in the general solvency, honesty, and resources of others. It is a very important factor in the exchange and production of wealth. The man who is able and willing to work often has few resources, but, with credit extended to him, his ability becomes enlarged and his usefulness is correspondingly widened. Many men have much ability as organizers, but without borrowed capital they are unable to engage in commercial or industrial enterprises. Thus, the noncapitalist is generally benefited by an extension of credit, and the quality and quantity of his productions become vastly enhanced. On the other hand, the capitalist is likewise benefited by the credit system. Without it all his resources would remain in his own hands, and he would incur undue liability in endeavoring to manage all of them himself. Professional men and women, estates, and aged people often have means that they cannot well invest or manage in their own enterprises, but by the credit system others may be assisted while they themselves obtain profit. Banking, railroad construction, the development of a new country, and the material business interests are all more or less dependent upon a general credit system.

Another form of trust is the public credit of a nation. It is based upon the confidence the people have in the expressed or implied promises the government makes to meet public obligations or payments. National credit is represented in bonds, postal money orders, and the credit element in the paper currency and subsidiary coins. No nation has been able to remain out of debt for a long time, or to successfully manage its affairs without drawing upon future possibilities. This element in the credit system applies equally to the subdivisions of the governments, as in the states or provinces, counties, and municipalities. For this reason the public confidence is vital as an element in the success of a state as well as in the enterprises of an individual.

CRÉDIT MOBILIER (krȧ-dė' mȯ-bē-lyȧ'), the name applied to a financial institution organized under the laws of France in 1852. Its purpose was to promote industrial enterprises of various kinds, among them the building of canals, construction of railroads, sinking of mines, and other vast projects. By the terms of the law the institution was authorized to hold shares in public companies and to meet payments by resorting to its own obligations. The operations conducted by this association assumed a very extensive scale. In 1854 large subscriptions were made to the Grand Central Railroad Company and the General Omnibus Company of Paris, and several large loans were negotiated with the government. At first a dividend of twelve per cent. was paid. In 1855 the dividend was forty per cent., while the next year it was reduced to twenty-two per cent., and the following year to five per cent. Owing to public mistrust, the speculative features were greatly curbed and the operations were lessened until the scheme failed totally.

CRÉDIT MOBILIER, a joint-stock company organized in the United States, in 1863, and which gave rise to a great congressional scandal known by the same name. The scandal was the result of attempts at bribery and corruption in connection with the construction of the Union Pacific Railroad from Omaha to the Pacific coast. The company at the time of organizing had a capital of $2,500,000. The charter of this company was sold in 1867 to a company which undertook the construction of the railroad, and the capital stock was increased to $37,500,000. In 1872 it was found that several members of Congress and the Vice President had been granted a number of shares of stock. This caused an investigation to be made by the House of Representatives. Oakes Ames, a wealthy Congressman from Massachusetts, Schuyler Colfax, Vice President of the United States, and several representatives were implicated in the charges. Resolutions of censure were passed by Congress against Ames and James Brooks of New York. The scandal died out shortly after and subsequent inquiries cleared the reputation of a number who were charged with bribery. The proposed railroad line was constructed and is in successful operation, being one of the highly important railroads in the United States.

CREE (krē), a tribe of the Algonquin Indians, one of the largest and most powerful branches of that family. It was chiefly confined to British America, inhabiting the country in the vicinity of Lake Winnipeg and the Saskatchewan River. The two main divisions are known as the Plains and the Wood Crees. Their language and customs were related to those of the Ojibwas. They are now confined to reservations and number about 10,000.

CREED (krēd), the statement or profession of fundamental points of belief of a religious body, or of the Christian Church at large. Many creeds sprang up at different periods in the development of Christianity, largely from the fact that Christ taught the simple truth in a concrete and informal manner; hence creeds may be said to have resulted from arguments and controversies as the teachings of Christ were drawn out into more precise and extended statements. The leading creeds include the following:

The Apostles' Creed, so named from the belief that the Apostles composed it, is accepted as a summary of the Christian faith by most churches. It is thought to date back to about

150 A. D., but it came down to us in its present form from the latter part of the 4th century.

The Nicene Creed was adopted by the Council of Nice in 325 and was promulgated to counteract Arianism. It is accepted as authority by the Roman and Greek churches and admitted by many of the Protestant denominations. It sets up the doctrine that Christ is of the *same substance* with the Father, and was supplemented in 381 by the Council of Constantinople, which emphasized the *divinity* of the Holy Ghost. This creed as modified by the Council of Constantinople is essentially identical with the form in which it appears in the Anglican prayer books.

The Athanasian Creed, which dates from the 6th century, was so named from Saint Athanasius, who supported the doctrine of the Holy Trinity and the *incarnation* of the Son of God. It is held as a creed of the Roman and Greek churches and is still read by the Protestant Episcopal Church of England, but is omitted from the services of the latter church in America.

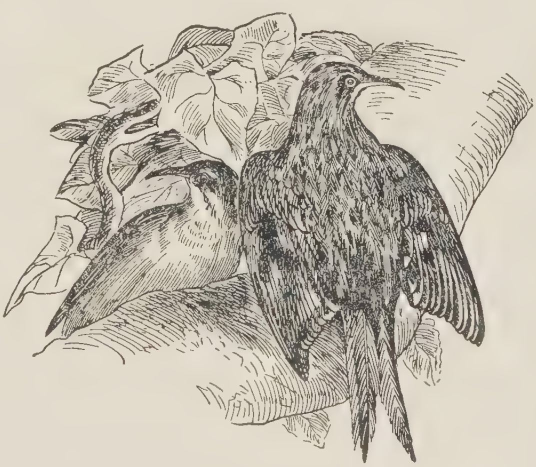
The Creed of Chalcedon, adopted by the Council of Chalcedon in the latter part of the 5th century, embraces the Nicene Creed and supplements it with the doctrine of the person of Christ. The Council of Trent formulated a statement of the doctrines of the Roman Catholic Church, and it was published as a bull by Pius IV. in 1864. This bull enforces the doctrines of *transubstantiation.*

The Augsburg Confession, adopted in 1530, embodies the fundamental doctrines of the Lutheran Church, which approves of the Apostles', Nicene, and Athanasian creeds. In addition it has the Catechisms of Luther, the Articles of Schmalcald, and a number of other confessions. The Church of England has the *Thirty-nine Articles,* and the Presbyterians support the *Westminster Confession of Faith,* one of the most elaborate of the creeds. The creeds named are the most important, and they constitute in a more or less modified form the basis of belief in the various churches. "Creeds of Christendom," published in three volumes, edited by Philip Schaff, is a reliable history of the confessions.

CREEK (krēk), an Indian tribe which was originally resident on the Coosa, Flint, Chattahoochee, and Alabama rivers and in the peninsula of Florida. The Creeks were first met by De Soto in 1540, and came completely under English influence after the overthrow of the French power in America. They joined the British in the Revolution and made an attack on Wayne's army in 1782. In 1790 they made a friendly treaty, but renewed hostilities two years later. Another treaty was made in 1796 and some land was ceded in 1805. They joined the English in the War of 1812, made an attack on Fort Mimms, Aug. 30, 1813, and massacred 400 people. After suffering numerous defeats they were completely overthrown by Gen. Jackson at Horseshoe Bend, March 27, 1814. A treaty followed in which some land was ceded, and early in the 19th century a portion of the tribe removed to Louisiana and later to Texas. In 1825 a treaty ceding some lands was agreed upon, but later it was repudiated.

Soon after the Creeks became divided into two factions, one favoring and one opposing emigration. A portion aided the Seminoles in 1836 against the government, and the remainder made an attack upon the frontier towns of Alabama and Georgia. Gen. Scott was sent against them, subduing them after numerous battles, and they were subsequently removed to a reservation between the Arkansas and Canadian rivers. In the Civil War a portion aided the Union and the others sided with the Confederates. A large tract of land was ceded by them to the government in 1866. This tribe of Indians held out against the teaching of the government for many years, but lately education has taken a firm foothold. Among the young people are many men and women who have taken readily to the common school and higher courses of study. They are skillful in the industries and are making rapid progress in the arts.

CREEPER (krēp'ẽr), a general name of any bird that seeks its food by running or creeping in the branches of trees. The common creeper of North America is quick and restless in its movements, has a curved bill and rigid tail, and searches for insects and their eggs among the crevices in the bark. The upper part of the body is reddish-brown, the head is darker, and the rump is lighter. It is widely distributed and is often seen in company with the smaller woodpeckers and nuthatches. A species native to South America is known as the tree creeper, and is somewhat larger than the common creeper of North America.



TREE CREEPER.

CREMATION (krė-mā'shŭn), the act of burning a corpse instead of burying it. This process was practiced quite extensively among the Greeks and Romans. The Hindus long disposed of their dead to some extent by a ceremony called *mass.* Sir Henry Thompson, an eminent physician, advocated its introduction into England in 1873 on sanitary grounds, but made little progress, owing to public sentiment against the innovation. Lately it was introduced in many European countries and the annual cremations have increased steadily. In 1925 they reached 2,167. The first American crematory was established at Washington, Pa., in 1876, but there are now large crematories in New York, San Francisco, Boston, Chicago, Detroit, Saint Louis, Philadelphia, Buffalo, and many other cities. The number cremated in the United States in seven years, beginning in 1876, was twenty-five, but since then the custom has been making steady growth. In 1925 the number of cremations performed in that country was 2,882.

The retort of a crematory, in which the corpse is placed, is built of fire brick. Bodies to be cremated are placed over a fuel chamber in an inclosure heated through holes. The construction is of such a character that no flames reach the body, and the volatile matter passes through highly heated chambers and dissipates in the atmosphere. Coke and coal gas are used chiefly for fuel. The body is entirely cremated in from one to three hours, depending upon the size, during which time it is subjected to a temperature from about 2,000° to 2,500° Fahr. In some of the newer crematories the construction is somewhat different, the doors being packed air-tight with asbestos, in which the body may be wholly incinerated in about fifty minutes. Crematory societies have been organized in European and American cities, who make it an object to look after and care for the cremation of corpses. After incineration, the ashes are placed in urns in buildings expensively designed and decorated. These urns are carefully sealed, labeled, and placed in niches for future reference, or are incased within the monument in the cemetery.

CREMONA (krē-mō'nȧ), a city of Italy, in a province of the same name, 47 miles southeast of Milan. It is finely situated on the Po River and a number of railroads, and has a considerable trade in merchandise and manufactures. The streets are wide and well improved with paving and sewerage. Electric lights, waterworks, a public library, two theaters, and electric railways are among the public utilities. It is the seat of a bishop and has several fine churches and palaces. Among the manufactures are porcelain, earthenware, mustard, cotton and silk textiles, and machinery. The Amati family, manufacturers of violins, resided at Cremona. It was colonized by the Romans in 218 B. C., was destroyed by Vespasian in 70 A. D., and was afterward captured by the Lombards. Population, 1916, 40,510.

CREOLE (krē'ōl), the name given to the descendants of French and Spaniards born in America and the West Indies. The application of the term has recently been widened to include all descendants of Europeans born in tropical America and the West India Islands. The Creole dialect is a mixture of different languages, including the native languages and Spanish, French, and English. Creoles are not a strong, robust race of people.

CREOSOTE (krē'ȯ-sōt), an oily, colorless liquid obtained chiefly from wood tar and coal tar. It was first made in 1832 by Reichenbach who obtained it by the destructive distillation of wood. Creosote has a specific gravity of 1.037 at 68°, evaporates without residue, has a burning taste, and mixes readily with ether, alcohol, and chloroform. It is used in the preservation of meats, in the treatment of tuberculosis, and for various purposes in medicine and surgery.

CRESCENT (krĕs'sent), the name applied to the moon in its first quarter, when its disk is enlarging and its horns are acute. A representation of the half-moon with upturned horns, called a crescent, was used by the ancients, especially the Egyptians and Greeks, as a symbol for their moon goddesses. The Byzantine Empire adopted the crescent as an emblem. After the capture of Constantinople by the Turks in 1543, it became the permanent emblem of the Turks and the Turkish Empire. Many of the churches in Russia have a crescent on the dome, surmounted with the cross, signifying that the Russian Church has a Byzantine origin.

CRESS (krĕs), the name of several species of plants with acrid or pungent leaves, most of which belong to the mustard family. They are widely distributed in the temperate and northern parts of the earth. The water cresses are the most common species. They grow abundantly on the brinks of small streams and ponds and are eaten as a salad. The *Virginia cress* is cultivated as a salad in Great Britain and many parts of North America. It is easily cultivated and thrives best in a damp or moist soil.

CRESTON (krĕs'tŭn), a city in Iowa, county seat of Union County, about 70 miles southwest of Des Moines, on the Chicago, Burlington and Quincy Railroad. It is surrounded by a farming country and has extensive railroad shops. The chief buildings include the courthouse, the high school, and a number of fine churches. It has manufactures of gloves, vehicles, and machinery. The public utilities include sewerage and waterworks systems. It was settled in 1868 and incorporated in 1869. Population, 1905, 8,382; in 1925, 8,160.

CRESWICK, Thomas, landscape painter, born at Sheffield, England, Feb. 5, 1811; died

Dec. 28, 1869. He studied at Birmingham and London, and in 1842 was awarded a premium by the British Institution. His pictures are mostly of large size, show a precision in drawing, and portray fine sky and landscape effects. He acquired some reputation as an etcher. Among his chief paintings are "Weald of Kent," "Welsh Glen," and "London Road a Hundred Years Ago."

CRETACEOUS PERIOD (krē-tā'shŭs), the division of geologic time which immediately follows the Jurassic and precedes the Eocene. It is so named from the chalk beds of England and France, where the term was first used, but the Cretaceous system is constituted only in part of chalk formations. Cretaceous rocks are found abundantly in North America. They extend from the mouth of the Mackenzie River southward into Mexico, occupy a great part of the Atlantic coastal plain from New York to Florida, whence they stretch westward to Texas and points near the Pacific Ocean, and are found in a large scope of the country from the mouth of the Ohio River to the Gulf of Mexico. Deposits of coal occur in the Cretaceous system west of the one hundredth meridian, which coal area embraces many sections of the Rocky Mountains. In some places they contain much greensand or marl, which is used extensively for fertilizing land in New Jersey and elsewhere. The thickness of the deposits vary materially, being about 400 feet in New Jersey, 2,000 feet in the Missouri basin, and 12,000 feet in many sections of the Rocky Mountains. This system is rich in both plant and animal fossils. The plants include palms, maple, willow, poplar, oak, and birch. Among the fossil animals are the crocodile, sponges, fish, sea serpents, birds with teeth, dinosaurs, and sea saurians.

CRETE (krēt), or **Candia,** one of the largest islands in the Mediterranean Sea, located south of the Aegean Sea and the Archipelago. It is about 150 miles long, from six to thirty-five miles wide, and has an area of 3,500 square miles. The surface is mountainous, including several well-defined ranges, of which Mount Ida is the culminating peak, 8,050 feet above the level of the sea. The mountain ranges extend the entire length of the island. They are covered with forests and penetrated by a number of fertile valleys. Much of the coast plain is exceedingly fertile. The southern coast has few harbors, but the northern coast is indented by several inlets, including the Bay of Suda. Many of the valleys are irrigated by numerous springs, and are covered by a luxuriant vegetation. Crete has a mild climate, cool in summer on account of northern winds, and distinguished in winter by numerous showers of rain. The industries are not in a high state of development at the present time. It has valuable deposits of iron, building stone, cobalt, manganese, and granite. Agriculture is the principal occupation, yielding cereals, cotton, and fruits, while the silk industry is securing a strong foothold. The fisheries yield valuable products; the vineyards produce largely, and from the forests cork and essential oils are obtained. Among the domestic animals are horses, cattle, poultry, and sheep. However, the manufactures and transportation are insignificant. Fabrics, machinery, utensils, and spirituous beverages are the principal products of manufacture. Most of the harbors of former ages are silted up and in poor condition.

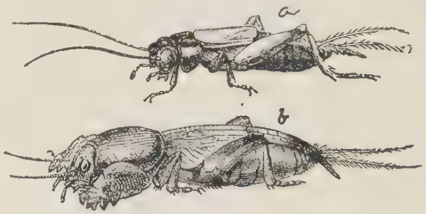
The history of Crete has its beginning in the period of Grecian mythology. Saturn, Minos, and Zeus are spoken of in Grecian fables among its kings. It was once a republic, then became the seat of Silician pirates, and was conquered by the Romans in 67 B. C. The apostle Paul visited Crete and established a church in it. In 823 A. D. it passed to the Saracens, but was returned to the Greeks in 962 by virtue of the conquest of Nicephorus Phocas II. It was given by the Byzantines to Boniface of Montferrat, who sold it to the Venetians in 1204, under whose dominion it remained until the latter part of the 17th century, when it fell to the Turks after a struggle of nearly twenty years. An insurrection occurred in 1868 against Turkish rule, but it was suppressed after a desperate struggle. Another insurrection broke out in 1877, which was followed by a declaration of union in 1878 with Greece. Peace was finally concluded by a concession of partial self-government under Mukhtar Pasha. Religious differences between the Cretans, whose religion is Greek Catholic, and the Mohammedans, led to difficulties which culminated in new troubles in 1884 and terminated in a war in 1897, in which the Cretans had the support of Greece. A number of European powers interceded and effected a blockade of the island with their fleets, but war was prosecuted between Turkey and Greece on the continent. While the conflict terminated in the success of Turkish arms, the interests of Crete were protected by the powers.

On Nov. 26, 1898, Prince George of Greece was announced as high commissioner of Crete by a number of European powers, who had agreed upon his nomination. He assumed the duties of his office in December of the same year. The arrangements acknowledged the suzerainty of the Sultan, guaranteed freedom of religion and security of life and property, and established a native army. As a result of the war of 1913, Crete was annexed to Greece. The language spoken is Greek. During its greatest prosperity Crete had a population of 1,200,000 and at the time of the Venetian dominion, about 900,000. Canea, the capital and largest city, has a population of 24,856. Candia is important as a port. In 1926 the island had a population of 347,086, of which 33,395 were Moslems and the remainder were mostly Greek Christians.

CRIBBAGE (krĭb'bāj), a game at cards played by two, three, or four persons with a full pack of 52 cards. A game called five-card cribbage, played by two persons, is the most popular amusement of this class. In playing the cards have a value as marked, except that the ace counts one and the face cards each ten. The points are scored by *pegs* on a board perforated with the necessary number of holes, called the *cribbage board,* and sixty-one points constitute the game. The advantage lies with the dealer, who makes up a third hand for himself, called the *crib,* partly out of the hand of his opponent, who at the commencement of the game is entitled to score three points for having lost the deal, which is determined by the players cutting for deal. The rules depend somewhat upon the game played. Three-handed cribbage is played by three persons on a triangular board, and in four-handed cribbage two persons play in partnership against the others.

CRICHTON (krī'tŭn), **James,** surnamed the Admirable, born at Eliock, Scotland, Aug. 19, 1560; slain in 1582. He descended from the Scottish kings, was educated at Saint Andrew's University, and early became accomplished in ten different languages and in science and literature. He traveled in France, Germany, and Italy and attracted universal amazement and applause. His popularity was enhanced by his beauty of person and elegance of manners. He became tutor of the son of the Duke of Mantua, and when in that district killed a skilled duelist. While on the streets one night he was attacked by a half dozen people in masks on account of jealously of his skill with the sword and his scholarly accomplishments. They were soon put to a disadvantage by his swordsmanship. When the leader became known, he was found to be one of Crichton's pupils. On asking his pardon and handing him his sword, the pupil received the sword and thrust it through the body of his teacher. It is thought that the biographers have greatly exaggerated the virtues and learning of Crichton.

CRICKET (krĭk'ĕt), a genus of insects which resemble certain kinds of locusts and include numerous species, among them the house, mole, field, and wingless crickets. The wings are straight, and, when not in use, are folded in a longitudinal position along the back. The jaws move transversely, like those of beetles, while the head is thick and the feelers are long, and they possess remarkable power of leaping and making a rasping sound. However, the organs of sound are possessed only by the males, and they are used to attract or excite the females. A large class of these insects, known as *field crickets,* are seen in vast numbers about harvest time. The *house cricket* is about one inch long, has a yellowish-brown color, and the feelers are about as long as the body. It has been associated with the fireplace of the home, largely on account of the noise made by the wing covers of the male, and feeds on crumbs, finding safety in cracks and crevices of the walls. In the daytime it remains secluded, but comes out at night in search of food, when its familiar noise is heard. The *mole cricket* has large fore legs developed for burrowing. Crickets are widely distributed in America and the other grand divisions. The *Sicilian cricket,* native to Sicily, issues the loudest noise.



CRICKET.
A, house cricket; *B,* mole cricket.

CRICKET, a popular athletic game, the national game of Great Britain. It is played on a smooth greensward with bats, balls, and wickets. The players form two sides of eleven each. A ball, two bats, and two sets of wickets and bails are required to play the game. The *wickets* consist of thick wooden stumps, twenty-seven inches high, and are placed on the ground in sets of three, at a distance of twenty-two yards apart. On the top of each set of stumps are placed two small pieces of wood, called *bails.* The rival sides toss for first innings, and the director of the side that is to play first places two of his men at the wicket as *batters,* while a *bowler,* a *wicket-keeper,* a *long-stop,* and *fielders* are placed in their several positions by the director of the opposite side. After these arrangements have been made and the *markers* or *scorers* are at their post, the *umpires* take their places and the game begins. The relative merits of the rival sides are decided by the total number of runs made by each eleven batters during two innings, the side whose players score the most being the winner. The bowler's object is to direct his ball by a swift movement of the arm toward the opposite wickets, at which one of the batsmen stands, and, if possible, to strike down the stumps or knock off the bails; while the object of the batsman, on the other hand, is to protect his wickets from the bowler's attack, by either stopping the ball when it reaches him or driving it out to the field.

CRIME, a grave offense against social order, morality, and law. The term cannot be defined in the same way in all ages and all countries, for the reason that the social and legal requirements differ widely. It has been made the object of statistical investigation for many years. Some writers regard crime as a disease, while others think that the environments and hereditary tendencies are largely instrumental in placing individuals in the list of criminals. The bureau of education in the United States made an investigation of the subject a few years ago and reported that eighty-two per cent. of the criminals examined were in good health, while eleven per cent. were in fair health at the time of committing the offense. Lord Brougham stated in 1860 that "criminal statistics are to the legislator what the charts and the compass are to the navigator." The object of study has been largely to ascertain the effects of criminal legislation, and to learn the real nature of crime, its extent, increase or decrease, and the influences that determine it.

The different conditions existing in various countries, together with the environments of the individuals, such as religious tendencies, climatic influences, form of government, scarcity of food and clothing, and social surroundings, have a marked influence on all material factors that enter into the production of the criminal type. On examining 82,329 prisoners it was found that two per cent. of the offenses were against the government; twenty-three, against society; twenty-one, against the person; forty-six, against property; and eight, of a miscellaneous character. Of the offenses committed in the United States it was found in a recent examination that fifty-six per cent. were committed by persons of foreign birth, and that climatic and geographical conditions influence in various respects. Those engaged as laborers seem to show a greater disposition to commit crime against the person of others than against property, while the reverse is true of those engaged in trades and commerce. Males show a greater tendency to crime than females, which is partly accounted for by the fact that upon the former devolve more largely the means of getting a livelihood. However, the statistical reports on the relative tendency to crime in the sexes must be taken with some allowance, because in females crimes are often condoned. Education shows a marked tendency toward overcoming crime, since the illiterate commit more numerously the higher crimes. An investigation made in Germany in 1905 demonstrates that married men respect property more generally than single men. They do not often commit the crimes against property, such as fraud and robbery, and are less prone to commit offenses against morality and human life. The same investigation demonstrated that widowers commit more crimes between the ages of thirty and fifty than either the married or unmarried men, but their tendency to crime decreases with their advancing years.

Poverty, ignorance, and idleness are the three most prolific sources of crime. Individuals rarely steal when they have an intelligent conception of life, remunerative employment, and a natural bent to industry. The best reforms then would seem to lie in wholesome economical legislation, universal education, and such restrictions that each offender may receive approximately exact justice. Recent writers quite generally agree that punishments should not have retribution for their object, but the penalty should be calculated as to its efficacy in removing from society the cause of danger. A thorough system of right education induces habits of industry in the young, while remunerative employment is a preventive against falling into the necessity of violating law in order to subsist. The education must go beyond the schoolroom; it must be furthered by libraries, public policy, and the sum of effective external circumstances which influence the character of society.

CRIMEA (krĭ-mē'ȧ), a peninsula in the southern portion of Russia, between the Sea of Azov and the Black Sea, and attached to the mainland by the Isthmus of Perekop. It is about 200 miles from east to west and has an area of 10,000 square miles. For governmental purposes it belongs to the Russian province of Taurida. The southern coast is elevated, while the remaining parts belong to the regions of the steppes. It is watered by numerous small streams, of which the Salghir and Alma rivers are the most noted. The climate is pleasant in summer, but quite severe and changeable in the winter season. Among the products are flax, hemp, tobacco, cereals, and many varieties of fruits. In the mountain districts are limited areas of excellent forests, which yield good building material. The domestic animals consist of horses, cattle, swine, and fine-wooled sheep.

The chief city and part of the Crimea is Sebastopol, from which a railroad line extends through the central portion and connects with all parts of western and northern Russia. Owing to its location on the boundary between Europe and Asia, it has been the seat of many military contentions. It belonged to the Cimmerians in early history, passed over to the Greeks, and later became a part of Rome. After the decline of Rome, it was occupied by barbarian tribes, and in 1237 it was overrun by the Mongols under Genghis Kahn. The Genoese captured and fortified Kaffa in 1261. They occupied large portions of it until 1475, when they were expelled by Mahomet II., who made it a dependent khanate. The Russians took possession of it in 1783, and it has been under their dominion with more or less restriction since that time.

The Crimean War occurred between Russia and the allied forces of France, Turkey, and England in 1854-56. The war was caused by Russia's attempt to secure preponderance in the eastern part of Europe by crowding the Turks out of the Continent, occupying Constantinople, and making Servia, Bosnia, and Bulgaria principalities of the Russian Danube territory. Russia took this step with the avowed purpose of securing a protectorate over the Greek Church, which brought the issues to a crisis. In the war which followed were fought the battles of Alma, Tchernaya, Balaklava, and Inkerman. The contest terminated by the loss to the Russians of their strongest fortress, Sebastopol. The last-named fortress had been greatly strengthened by Catharine II. in 1786 with the view of overawing the Turks. After its fall, a treaty of peace was concluded at Paris, April 27, 1856, by the terms of which the Ottoman Empire was guaranteed independence. The Crimea has a population of 583,962, about half of which is Russian. The others include principally Tartars, Greeks, Jews, Germans, and Bulgarians.

CRIMEAN WAR. See **Crimea.**

CRINOIDEA (krī̇-noid'ē̇-ȧ), the name of a group of sea animals, so called from the fact that their body resembles the form of a water lily. They consist of an expanded or spreading disk upon the end of a long, slender, jointed stem, which is attached to the bottom of the sea during practically the entire period of their life. At present the species are limited to a small number, but formerly, especially during the Carboniferous Age, they were very numerous, which is evident by the large number of fossil remains found in the deposits of that period. The first traces of their remains are found in the Silurian system, and most of the species appear to have become extinct with the formation of the more recent carboniferous rock. The animals of this class now living feed on spores of algae, minute crustaceans, and other food forms common to the sea. They are very sensitive to a change of temperature, inhabit the deeper water, and when disturbed fall on the bottom of the sea or swim away by movements of the arms. Their arms drop off when the animal is placed in an uncomfortable position, but are restored through a process of regeneration, if the main body survives.

CRINOLINE (krĭn'ō̇-lĭn), a stiff fabric formerly made of horsehair, but now of various material, used for stiffening a collar, skirt, or other parts of a garment. The same name is applied to a hoopskirt, which has been fashionable at various periods. The hoopskirts worn in 1740 were three feet across the hips.

CRIPPLE CREEK, county seat of Teller County, Colorado, about ninety-five miles southwest of Denver, on several highways, on the Midland Terminal, and other railroads. It has a healthful climate and is surrounded by a picturesque country. The chief buildings include the high school, the courthouse, the public library, and several fine churches. It has extensive systems of street lighting and public waterworks. The industries consist chiefly of machine shops and enterprises connected with mining. Cripple Creek is among the most interesting and remarkable of the many mining towns of the West. Gold was discovered in its vicinity in 1886, but the more productive veins were not found until 1891, when Robert Womack and others opened up a very productive lode. It was soon after developed by the Gold King Mining Company, and within a very short time the town had a population of 9,000. The output in 1891 was $20,000, but this was enlarged annually until the normal output reached about $18,000,000. A fire did considerable damage in 1896, but it was soon rebuilt and improved. In the vicinity are a number of other mining towns, including Altman, Anaconda, Lawrence, and Victor. Population, 1920, 6,650.

CRISP, Charles Frederick, American statesman, born in Sheffield, England, Jan. 20, 1845; died in Atlanta, Ga., Oct. 23, 1896. His parents were visiting in England at the time of his birth and returned to the United States in 1846. They settled in Georgia, where the young man received a common school education. He entered the Confederate army in 1861 and was promoted to the rank of lieutenant, and taken prisoner by the Union forces in May, 1861. After the war he studied law and was admitted to the bar. He was elected attorney-general of the southwestern judicial district of Georgia in 1872 and served till 1877, when he became judge of the superior court. He was soon after elected to the same office by the General Assembly, and was reëlected in 1880 for a term of four years. In 1882 he was elected to Congress, of which he was a member until his death, serving as speaker of the House from 1892 until 1896.

CRISPI (krē̇s'pē̇), **Francesco,** Italian statesman, born in Sicily, Oct. 4, 1819; died Aug. 11, 1901. After studying law at Palermo, he was admitted to the bar, becoming noted as an advocate. He took a prominent part in the Palermo insurrection in 1848, and, after it failed, went into exile. However, he organized another revolution in 1859-60, landed at Palermo with Garibaldi, and was successful in the expulsion of the Bourbons and the annexation of Sicily to Italy. He became a prominent member of the provisional government, was elected to the first parliament of united Italy in 1861, and in 1876 became president of the chamber of deputies. After serving for several years as premier in Italy, he resigned in 1891 and resumed the office in 1894, but, after a downfall of the ministry on account of a defeat of the Italian forces in Africa, he was succeeded by Marquis di Rudini in 1896. In 1898 Signor Crispi was charged with having extorted large sums of money from the banks of Rome and Naples. Parliament appointed a committee to investigate the matter. The committee voted that there was no ground for impeachment, but censured him for the offense. As soon as the report was read, he resigned and appealed to his constituents for a vindication. This resulted in his reëlection to the parliament in April by a large majority. The name of Crispi is indelibly connected with the progress of modern Italy.

CRITIC (krĭt'ĭk), one who possesses literary qualifications to judge of the qualities of anything by some standard, criterion, or canon. The term is applied particularly to one who reviews and judges productions of literature and art.

CRITICISM (krĭt'ĭ-sĭz'm), **Higher,** the term applied to the criticism of the origin, form, and value of the Bible and other books, in distinction from the *lower criticism,* which is concerned with their text. A few attempts at this criticism were made in the early centuries of the Christian era, but extensive work along this line is wholly modern. The first work of any extent was published by Jean Astruc in a book entitled "Conjectures Concerning the Original Memoirs used by Moses in Composing the Book of Genesis," which appeared in print at Brussels in 1753. The literature on this subject is now almost without limit. The most complete discussion is contained in the "Higher Criticism," by A. C. Zenas, New York.

CRITTENDEN (krĭt't'n-dẹn), **George Bibb,** soldier, born at Russelville, Ky., Mar. 20, 1814; died Nov. 27, 1880. He graduated at West Point in 1832, opened a law office in Kentucky, and subsequently served in the Mexican War. In 1856 he was promoted to be lieutenant colonel, but resigned in 1861 to join the Confederate army, in which he had command of Kentucky and part of Tennessee. He was made major general and was successful as a commander, but was censured for his conduct at the Battle of Mill Spring, where he was defeated. Afterward he served in the army as a volunteer and was State librarian of Kentucky in 1867-71.

CRITTENDEN, John Jordan, statesman, born in Woodford County, Kentucky, Sept. 10, 1787; died near Frankfort, July 26, 1863. He graduated from William and Mary College, Virginia, in 1807, was admitted to the bar, and became celebrated as a successful criminal lawyer. He was appointed attorney-general of the Territory of Illinois in 1809, elected to the Legislature of Kentucky in 1811, and to the United States Senate in 1817. In 1827 he became attorney-general of Kentucky, was made secretary of the state in 1834, and again entered the United States Senate in 1835, where he supported Henry Clay's measures. He was appointed Attorney-General in the Cabinet of President Harrison and served through his administration and that of Fillmore. When Henry Clay resigned in 1842, he was appointed in his place and was elected for a full term the year following. The annexation of Texas was opposed by him, but the war with Mexico received his support. He became Governor of Kentucky in 1848, and was again elected to the United States Senate in 1855, where he opposed the proslavery policy of Pierce and Buchanan. In 1861 he was succeeded in the Senate by John C. Breckenridge, but was elected to the House of Representatives the same year. He was a strong supporter of the Union, but opposed the employment of negroes as soldiers and the formation of West Virginia as a separate State. All of the great events prior to and during the early part of the war received marked attention from him, and he was in the midst of a political campaign for reëlection to Congress when his death occurred.

CRITTENDEN, Thomas Leonidas, soldier, born in Russellville, Ky., May 15, 1815; died Oct. 23, 1893. He was the son of John Jordan Crittenden, was State attorney in Kentucky in 1843, and rendered honorable service during the Mexican War. In 1862 he commanded a division of the Union army at Shiloh, took part in the battles of Murfreesboro and Chickamauga, and commanded a corps at the Battle of Stone River in 1863, where his gallant conduct won promotion to the rank of brigadier general. In 1866 he entered the regular army, serving until 1881, when he retired.

CRITTENDEN COMPROMISE, a measure introduced by John Jordan Crittenden, in 1860, in the United States Senate. The proposition was in the form of a constitutional amendment which would permanently divide the Union into a free state and a slave state, the boundary being the line of 36° 30'. It provided that the United States was to pay the owner for any fugitive slaves, that the Federal government could not limit or prohibit the interstate slave trade, and that slavery was to be retained in the slave states and in the District of Columbia. The proposition caused much discussion in both branches of Congress and throughout the country. On Jan. 14, 1861, it was defeated in the House by a vote of 113 to 80, and on Mar. 2, 1861, in the Senate by a vote of 20 to 19.

CROATIA AND SLAVONIA (krȯ-ā'shĭ-ȧ, slȧ-vō'nĭ-ȧ), a province of Jugo-Slavia, formerly one of the crown lands of Hungary. It is bounded on the north by Styria and Carniola, on the east and northeast by Hungary, on the south by Servia, Bosnia, and Dalmatia, and on the west and southwest by Istria and the Adriatic Sea. Croatia occupies the southwestern and Slavonia the northeastern part. The Drave river separates it from Hungary, and through the central part flows the Save river, which separates Croatia from Slavonia. The area is 16,675 square miles.

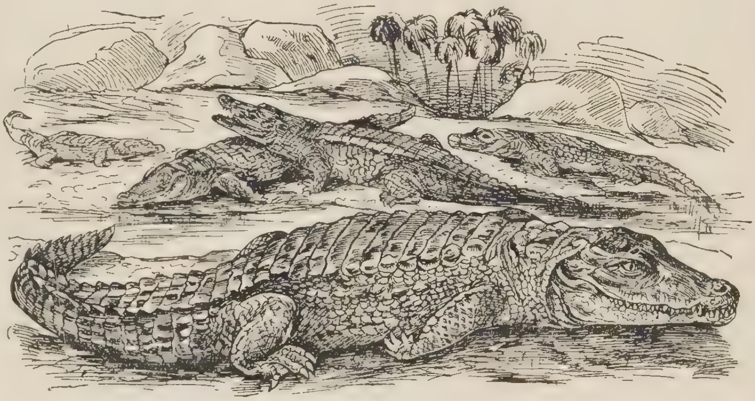
Most of the surface is mountainous, being cut up by ranges of the Julian and Styrian Alps, which attain heights of from 2,000 to 4,000 feet. Croatia contains the Agram Highlands, the Kapella, and the Croatian Karst. A fertile coast plain and productive valleys characterize the surface of Slavonia. Currents of the Adriatic sweep across the coast land of Croatia, hence its climate is raw and changeable, and numerous swamps make the climate of Slavonia somewhat unhealthful. The minerals consist chiefly of coal, copper, sulphur, and marble. Glass, paper, sugar, silk and cotton textiles, spirituous liquors, and machinery are the principal manufactures. About thirty-five per cent. of the surface is arable land and a considerable portion is utilized for meadows and in forestry. Corn and wheat are the chief cereals and cattle and hogs are grown in large numbers. Fruit, especially grapes, and vegetables, are important products. Transportation is furnished by the Drave and Save rivers and a number of railroads. Fiume, on the Adriatic, is a port of entry and has railroad connection with the principal cities of the country. Porto Ré, Zengg, and Agram are commercial centers.

Both Croatia and Slavonia were a part of ancient Pannonia, a province of Rome. They comprised border territory in the conflict between Christianity and Mohammedanism for many centuries. Croatia was annexed to Hungary in the eleventh century, but it has continued a policy looking toward greater independence. The *Ausgleich* of 1867 was partially applied to both Croatia and Slavonia. Italy sought to annex portions of it in 1919, but the Paris Peace Congress transferred it to Jugo-Slavia. The inhabitants consist largely of Serbs and Croats, with a small mixture of Germans and Hungarians. A large majority of the people belong to the Roman Catholic church, but the Greek Orthodox and a number of Protestant denominations are well represented. Population, 1922, 2,425,512.

CROCKETT (krŏk'et), **David,** pioneer, born in Limestone, Tenn., Aug. 17, 1786. At the age of twelve years he became an associate of a German and tramped with him 400 miles. Being dissatisfied, he returned home and worked as a teamster and drover for several years. He learned to read and write at the age of eighteen years, when he attended school for a few weeks. In 1811 he removed to Franklin County, then a wild and unsettled part of the State, and two years later served in the war against the Creek Indians under Gen. Jackson. He was elected to the Legislature in 1821, where he made a creditable record, although he was ignorant of the art of public speaking. He was reëlected to the Legislature and in 1826 secured a seat in Congress, where he served three terms. His reputation at Washington was that of a man of shrewdness, common sense, and thorough independence. When the Texan contest for independence broke out, he joined the Texan patriots. He was one of the 140 defenders of Fort Alamo, who were attacked by a large Mexican force. All but six men were killed in the defense, and along with five survivors he surrendered to Santa Anna. The survivors were shot by the orders of the commanding general on March 6, 1836.

CROCKETT, Samuel Rutherford, novelist, born in Galloway, Scotland, Sept. 24, 1860. He was the son of a tenant farmer. His ability in the common schools attracted the attention of his teacher and caused his admission to the University of Edinburgh in 1876, where he graduated four years later. He became traveling tutor of Oxford University, in which capacity he visited all important parts of Eurasia and Africa. During convenient times he wrote for periodicals and engaged in novel and poem writing. His versatility, close discernment, and agreeable style made his works highly popular. After returning to Scotland, he completed a course at the Free Church New College, and received a charge at Penicuik, in the Free Church. Among his writings are "The Sticket Minister," "Mad Sir Uchtred," "Bog, Myrtle, and Peat," "Lilac Sunbonnet," "Poems of Ford Beriton," "Men of the Moss Hags," and "The Banner of Blue." He died April 20, 1914.

CROCODILE (krŏk'ô-dīl), a large reptile which resembles a great lizard, found in portions of Africa, Asia, the Sunda Islands, and the Moluccas. Crocodiles are one of four living representatives of the order *Crocodilia.* The other three are lizards, serpents, and the class including turtles and tortoises. The group of crocodiles includes the crocodiles, alligators, and gavials. The alligators are native only to America, while the gavials belong exclusively to Asia and are found principally in India. All the animals constituting the *Crocodilia* are oviparous; that is, they produce eggs and hatch their young outside the body. They are characterized by long jaws and four short limbs; the fore feet have five toes and the hind feet four, the latter being webbed. Square bony plates cover the skin; the tail is long and compressed laterally. The tear glands are large, the heart is four-chambered, and the nostrils are located at the end of the snout, with capacity to close against ingress of water.



AFRICAN CROCODILE.

Crocodiles live mostly in water, but they are seen frequently on the sand in the warm sun. Their movement in the water is quick and well directed, while on land they move forward rapidly, but are slow to turn their bodies. The best way to elude them on land is to turn rapidly and repeatedly in making a retreat from them. Their food consists of flesh, such as fish, quadrupeds, and carrion, and is preferred in a state of putrefaction. The eggs, about the size of goose eggs, are laid in the banks under covering and hatched by the warmth of the sun. The female of some species guards the eggs and shows marks of tenderness to the offspring. Crocodiles sometimes attain a length of thirty feet and attain a great age. The older individuals do not hesitate to attack larger animals and man. They are accompanied by a little bird, much like the cowbird associated with cattle. This bird consumes the insects and worms that fix themselves to their bodies and warns them in times of danger. They were held sacred by the ancient Egyptians. At present they are not found on the Nile, except near its head waters.

CROCUS (krō'kŭs), a genus of plants native to the eastern part of Europe and to Asia Minor. Several of the species bloom profusely. The flowers are violet, purple, yellow, white, striped, or saffron-colored. They are extensively cultivated in gardens; a sandy soil is best for prolific growth. According to their period of flowering, they are divided into the *vernal* and the *autumnal* crocuses. The dried stigma and style of several species form a powerful aromatic and are used to color an orange-yellow.

CROESUS (krē'sŭs), the last King of Lydia, the son and successor of Alyattes. He became king when he was thirty-five years old, about the year 568 B. C. He extended the kingdom eastward to the Halys River, making the Greeks of Asia Minor tributary. Great wealth passed to him from his father. To this he added largely by conquest and by the riches of the golden sands of the Pactolos River, until his treasures became proverbial. The Greeks looked upon him as a perfect type of human prosperity, greatly in contrast with his downfall. The Grecian historian, Herodotus, makes the history of his life a vivid, dramatic story. He relates that Solon visited Croesus, and, after being shown his great riches, was asked whom he regarded the happiest man. The sage answered: "Tellus, of Athens, because he lived in the time of his country's prosperity, was surrounded with children and children's children, who were both beautiful and good; and met death upon the battlefield after gaining a celebrated victory over his enemy." Next to him, Solon counted Cleobis and Bito, two Grecian youths who had won prizes at games by reason of their strength and skill, and afterward drew the car of their mother forty-five furlongs to the festival of Juno, on account of which the praises of all men were given to them, and they were allowed to die in the temple of the goddess, after offering sacrifices at the holy banquet in her honor.

Later in life the misfortunes of Croesus began to multiply. His favorite son was accidentally slain at a boar hunt, while his army was conquered by Cyrus. It was prophesied by the oracle of Delphi that he would destroy a mighty empire, if he went to war. It was later demonstrated that the empire to be destroyed was his own, for Cyrus defeated his army and conquered Sardis. At the fall of Sardis he was about to be slain, when his son, who had been dumb, suddenly regained his speech and made known to the Persians that his father was the king. He was therefore taken before Cyrus as a prisoner and condemned to die on the funeral pyre. As he saw the flames rising, the words of Solon came to his mind, and he spoke his name so it was heard by those next to him. When Cyrus heard of this, he requested Croesus to explain why he had spoken of Solon, and the captive replied that the sage visited him in his prosperity and stated that no man should be counted happy until the manner of his death was known. Cyrus became deeply impressed and released the captive, making him the guardian of Cambyses, the heir to his throne, and his own confidential friend.

CROKER (krō'kẽr), **John Wilson,** author and statesman, born in Galway, Ireland, Dec. 20, 1780; died Aug. 10, 1857. He was educated at Trinity College, Dublin, studied law and was called to the bar, and in 1804 published "Familiar Epistles," a satire on the Irish stage. He was one of the founders of the *Quarterly Review,* to which he contributed a large number of articles. In 1808 he was elected a member of Parliament, where he defended the duke of York against a charge of corruption in office, and was a strenuous opponent of the reform bill. His writings include "Battle of Talavera" and "History of England for Children."

CROKER, Richard, politician, born at Black Rock, Ireland, Nov. 24, 1843. He came to the United States with his parents at the age of two years and received an education in the schools of New York City. He was elected alderman in New York in 1868 and in 1872, coroner in 1873, fire commissioner in 1883, and city chamberlain in 1889. While in these city positions he became a leader of the Tammany Hall organization in New York City. In 1899 he attracted attention at a banquet given in memory of Thomas Jefferson by outlining the policy of the Democratic club. Being opposed to bimetallism, he supported McKinley in 1896, but gave Bryan hearty support in 1900, owing to his opposition to the foreign policy pursued by the administration of President McKinley. In 1902 he resigned as leader of Tammany Hall and later resided in Ireland. He died April 29, 1922.

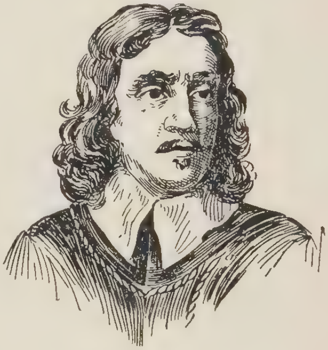
CROLY (krō'lĭ), **Jane Cunningham,** author and journalist, born at Market Harborough, England, Dec. 19, 1831; died Dec. 23, 1901. She came to the United States in 1839, and after attending school began to contribute to magazines and newspapers. She married David Croly, a journalist, in 1856, in which year she called the first congress of women in the United States. In 1889 she founded the New York City Women's Press Club, and three years later was made professor of journalism and literature at Rutgers Women's College, which institution conferred a degree upon her. In literature she is known quite extensively as "Jenny June." Her publications include "Thrown on Her Own Resources," "Knitting and Crocheting," "For Better or For Worse," "Cookery Book for Young Housekeepers," and "History of the Woman's Club-Movement in America." In 1860-87 she edited *Demorest's Magazine.*

CROME, John, landscape painter, born at Norwich, England, Dec. 22, 1768; died April 22, 1821. His subjects were taken largely from the scenery of his native country, but he was influenced greatly by the Dutch school of painters. He executed a large number of etchings which are valued for their faithful representation of trees. His reputation did not rise until after his death, when his pictures began to sell at a high price. He is regarded the founder of the Norwich school of artists. His paintings include "Fish Market at Boulogne," "Oak at Poringlam," "Chapel Fields, Norwich," "Household Heath," and "Boulevard des Italiens, Paris."

CROMER (krō'mẽr), **Evelyn Baring,** diplomatist, born at Norfolk, England, Feb. 26, 1841. He was educated at the Royal Military Academy at Woolwich, served as Governor General of India from 1872 to 1876, and was for some time commissioner of finances in Egypt. In 1880 he was made Finance Minister of India and three years later became counsel general and minister plenipotentiary in Egypt. In 1892 he was made first Baron Cromer and in 1901 was created an earl. His splendid public service in Egypt rescued that country from bankruptcy and promoted the efficiency of public service. He published a number of state papers and military works. He died Jan. 29, 1917.

CROMPTON (krŏmp'tŭn), **Samuel,** inventor of the mule-jenny, born at Firwood, Lancashire, England, Dec. 3, 1753; died June 26, 1827. He displayed an early disposition for mechanics and educated himself, working a portion of the time as a cotton spinner. On account of musical skill, he earned small sums of money by playing the violin at Bolton Theater. He invented his machine for spinning cotton at the age of twenty-one years, but was financially unable to have it patented, or to engage in the manufacture of fabrics. At length he made his invention known to a few manufacturers for small sums of money, receiving in all about $300. Later he secured a loan of $2,500 from a friend whereby he was enabled to employ a few hands besides his own family, and was fully sixty years of age before any profit came to him. Parliament later voted him an allowance of $25,000. His invention was made after Hargreaves' spinning jenny and Arkwright's roller frame had been invented, and his mule, as it is commonly called, combines the principles of both. His success in making the invention has caused him to rank as one of the greatest benefactors to mankind. In 1811 fully 155,880 of Hargreaves' spindles, 310,500 of Arkwright's, and 4,600,000 of Crompton's were in use. It is estimated that at the present time there are fully 30,000,000 spindles in use in which Crompton's principles are employed.

CROMWELL (krŏm'wĕl), **Oliver,** Lord Protector of the British Commonwealth, born at Huntingdon, England, April 25, 1599; died Sept. 3, 1658. His elementary education was secured at Huntingdon and in 1616 he was admitted to Cambridge, but left the university on the death of his father, after attending about one year. He married Elizabeth, daughter of Sir James Bourchier, a woman of prudent character and amiable disposition. In 1628 he entered the House of Commons for Huntingdon, during the critical period when Parliament and Charles I. were at variance. He was among the first to proffer aid to the state in the long contention which followed and raised companies of volunteers, drilling them at his own expense. The companies drilled by him were known as *Cromwell's Ironsides,* and with them he rendered astonishing military service for the parliamentary army at Naseby in June, 1645, when the forces of the king were utterly routed. In May, 1546, the king escaped from Oxford in disguise and risked his fortunes by joining the Scottish army at Newark, but was shortly afterward given up to the parliamentary commissioners. The king was tried in January, 1649, and condemned and executed. The House of Lords was speedily abolished, and Cromwell became a permanent member of the new council of state.


OLIVER CROMWELL.

In the same year Cromwell proceeded to Ireland to crush out the rebellion by the Royalists, and was soon after appointed lord lieutenant and commander in chief of the army. At Drogheda he ordered the execution of the garrison of 2,800 who had refused to surrender, which was in accordance with the rules of war of the time, and in 1650 captured Wexford. He resigned his command in Ireland to Ireton, and at the request of Parliament proceeded at the head of an expedition against Scotland, where the Royalists had proclaimed Charles II. their king. The decisive victory at Dunbar on Sept. 3, 1650, and the total defeat of the Royalists just a year later made him the principal character in Britain. In 1653 he dissolved the *Long Parliament* with 300 soldiers, summoned a council of state, and later chose a Parliament of representatives from the three kingdoms, commonly called the *Little Parliament* or the *Barebones Parliament.* A new Parliament was chosen fifteen months later, but, owing to the incapacity of that body, the affairs of the government were put into his hands. On Dec. 2, 1653, the council of officers declared Oliver Cromwell sole governor with the title of lord protector, after he refused the title of king. His government was liberal and well directed, and the country remained generally prosperous during his incumbency.

CROMWELL, Thomas, Earl of Essex, statesman, born at Putney, England, about 1485; died July 28, 1540. He descended from humble parents and his early education was limited, and for some time he was a clerk in a factory at Antwerp. In 1513 he returned to England, where he adopted a business career, and was employed as an agent of Cardinal Wolsey. He supported Henry VIII. and the Reformation, coöperated with Cranmer in opposing the supremacy of the Pope, and in 1534 became Secretary of State. Henry VIII. appreciated his service and made him Earl of Essex in 1540. He promoted the marriage of that king with Anne of Cleves, because she favored the Lutheran faith, but his part in this affair caused him to lose the favor of the king chiefly because the latter regarded her with disgust. The king assented to a bill of attainder against Cromwell, who was condemned and beheaded.

CRONJE (krŏn'yĕ), **Piet,** soldier, born in South Africa in 1835. He descended from a family of French exiles who settled in Holland after the revocation of the Edict of Nantes, and from early youth manifested a strong desire for independent government. In 1877 he took a prominent part against the British and demonstrated marked ability at Majuba Hill. He held an important command in the Boer army in the war of 1899-1900, commanding at Mafeking, Modder River, and Magersfontein. On Feb. 27, 1900, his army was compelled to surrender near Paardeburg, where he had successfully resisted a long siege. After the capture he was confined for some time on the island of Saint Helena. He died Feb. 4, 1911.

CRONSTADT. See **Kronstadt.**

CROOK (kro͝ok), **George,** soldier, born near Dayton, Ohio, Sept. 8, 1828; died March 21, 1890. He graduated at West Point in 1852 and entered the military service in California the same year, engaging in expeditions against the Indians for nine years. He served with distinction in the Civil War. In 1862 he was brevetted lieutenant colonel, engaged in the campaigns of Virginia and Maryland, and later participated in the battles of Tullahoma and Chickamauga. He was brevetted major general in 1865, and commanded the cavalry of the army of the Potomac until the close of the war. In 1872 he compelled the Pi-Utes and Apaches to submit, and in 1875 subdued the Cheyenne and Sioux Indians in the northwest. In 1882 he drove the Mormons and squatters from the Indian lands upon which they had encroached and the following year subdued the Chiricahuas. Owing to his valuable service, he was made brigadier general in 1873, and was promoted major general of the United States army in 1888. The Indians under his charge were wisely managed, numerous reforms were introduced, and they were paid in cash instead of store orders. His efforts induced many of the tribes to become self-supporting.

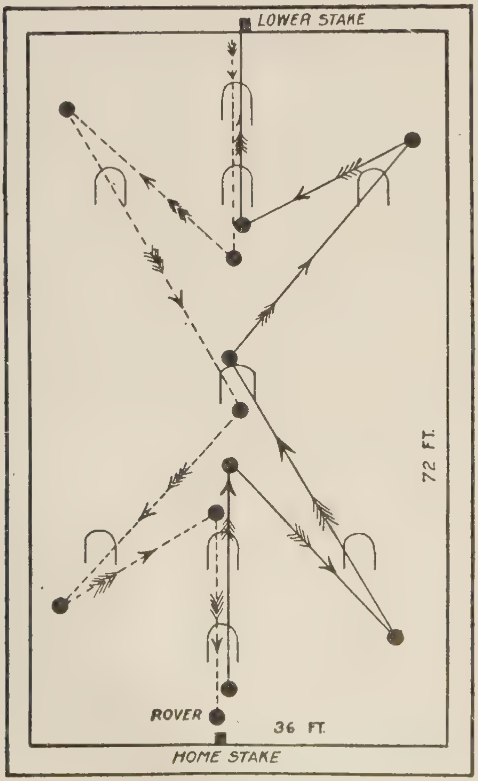
CROOKES (kro͝oks), **William,** physicist, born in London, England, June 17, 1832; died April 4, 1919. He studied at London, superintended in the Radcliffe Observatory, and lectured on chemistry in the Science College of Chester. The *Chemical News* was founded by him in 1859 and the *Quarterly Journal of Science,* in 1864. In 1863 he became a fellow of the Royal Society, in 1876 was made vice president of the Chemical Society, and in 1880 was awarded the gold medal and 3,000 francs by the French Academy of Science. Among the discoveries due to his efforts is a process by which extreme vacua are produced in incandescent electric lighting; the Crookes tube, useful in Röentgen ray photography; an amalgamation process for separating silver and gold from their ores; and the invention of the radiometer. He made considerable progress in throwing light upon the origin and constitution of chemical elements. Among his many excellent writings on physical and other subjects are "Select Methods of Chemical Analysis," "Psychic Force and Modern Spiritualism," "Experiments with Psychical Phenomena," and "Correspondence upon Dr. Carpenter's Asserted Refutation of the Author's Experimental Proof of the Existence of a Hitherto Undetected Force."

CROOKES TUBES, the sealed vessels from which the air has been exhausted to the extent that a high vacuum is obtained, and which have electrodes at opposite ends. They are so named from the inventor, Sir William Crookes, and are used to secure various effects of electrical discharge. By a high vacuum is meant one in which the gaseous pressure is not more than one-millionth of that of the atmosphere. Tubes somewhat similar were invented by Geissler, known as the *Geissler tubes.* They are of various forms and are supplied with platinum terminals and filled with different gases at different pressures. When the current of an electric machine is sent through them, it gives rise to many beautiful luminous effects. They are used in the spectrum analysis of gases and in the production of cathode rays.

CROOKSTON, a city in Minnesota, county seat of Polk County, on the Red Lake River, in the valley of the Red River of the North. It is on the Northern Pacific and the Great Northern railroads. The locality is fertile, producing hay, cattle, cereals, and sugar beets. The chief buildings include the courthouse, the public library, a gymnasium, a business college, and the high school. Among the manufactures are flour, clothing, machinery, and farming implements. Systems of waterworks and electric lighting are maintained. It was settled in 1872 and incorporated in 1879. Population, 1905, 6,794; in 1920, 6,650.

CROPSEY (krŏp′sē), **Jasper Francis,** landscape painter, born in Rossville, N. Y., Feb. 14, 1823; died June 22, 1900. At first his attention was given to architecture, but soon after he turned to landscape painting. He visited France, Germany, England, Switzerland, and Italy in 1847, remaining three years in the last-mentioned country. He went abroad again in 1855 and resided seven years in London. His productions were exhibited at the Royal Academy and the International Exposition in 1862. In 1851 he was elected a member of the National Academy and of the American Water-Color Society. His most famous production is "Pontine Marshes."

CROQUET (krō-kā′), a popular open air game played by two or more persons with balls and mallets. The ground should measure 36 by 72 feet and be raised two inches at the border. Near each end of the ground is a *stake,* and nine *wickets* are set at convenient points between them. The game consists of driving a ball from the stake at the head of the ground through the wickets on the right hand side and to the stake at the foot of the ground, whence the ball is driven to the point of the beginning by way of the wickets to the left hand. When a ball has made the circuit of the field but has not touched the stake at the head of the ground, it is called a *rover* and may play on every other ball in the field in one turn. A complete croquet set consists of eight balls, painted in agreement with eight mallets, but in practice two or more persons play the game. The player loses his turn when he fails to drive the ball through a wicket, hence the game may be of considerable duration. Croquet is a very old game, but its popularity is of comparatively recent date. Interest in it is promoted in England and America by national and international associations.



CROQUET GROUNDS.

CROSBY (krŏz′bĭ), **Frances Jane,** hymn writer, born at South East, N. Y., Mar. 24, 1820. When six weeks old she lost her eyesight, and at an early age was sent to the Institution for the Blind in New York City, which she attended nine years. Subsequently she was teacher of Greek and Roman history at that institution, but retired in 1858, when she married Alexander Van Alstyne. She is best known by her hymns, of which she published several thousand. They include "Pass Me Not, O Gentle Saviour," "I am Thine, O Lord," "Jesus is Calling," and "Safe in the Arms of Jesus." "Hazel Dell" and "There's Music in the Air" are among her compositions. Many of her secular poems were published in a volume entitled "The Blind Girl and Other Poems." She died Feb. 12, 1915.

CROSBY, Howard, Presbyterian clergyman, born in New York City, Feb. 27, 1826; died March 29, 1891. In 1844 he graduated at the University of New York. He became professor of Greek in that institution in 1851 and at Rutgers College in 1859, and was ordained a minister in 1861. He held appointments at New Brunswick, New Jersey, and in New York City. Degrees were conferred upon him by Harvard University and Columbia College, and he was made chancellor of the New York University in 1870, in which capacity he officiated for eleven years. He was a member of the New Testament Revision Committee of the American section, and aided in organizing the Society for the Prevention of Crime in 1877. Among his writings are "Humanity of Christ," "Bible Companions," "Lands of the Moslem," "Life of Jesus," "Seven Churches of Asia," "Commentary on the New Testament," and "Bible View of the Jewish Church."

CROSBY, Pierce, naval officer, born at Chester, Pa., Jan. 16, 1824; died at Washington, D. C., June 15, 1899. He was educated in a private school and elected midshipman from Pennsylvania in 1838. He served on various vessels from 1842 to 1860, and was assigned to duty in Chesapeake Bay at the opening of the

Civil War, in which he rendered efficient service in the Battle of Big Bethel and in attacks on forts Hatteras and Clark. He participated in the capture of New Orleans and in the Battle of Vicksburg. His commands were on the warships *Florida, Keystone State, Metacomet,* and *Shamokin.* In 1868 he was promoted to a captaincy, in 1874 to commodore, and in 1882 to rear admiral, and retired in 1883 after forty-eight years of active service.

CROSS, a figure produced by the intersection of two lines at right angles. In ancient times a cross was formed by fastening a piece of wood across an upright post or tree, which served for the execution of criminals by nailing or binding them in an upright position. Christ was crucified by nailing the hands and feet to the cross and securing the limbs by means of cords. The cross was adopted early as a symbol of Christian faith. It was carried by the legions of Christian warriors and was displayed in churches, cemeteries, and other places as a symbol of loyalty to the Christian cause. The cross is still a sign of distinction from the crescent used as a symbol by the Moslems, and is seen in Christian print, architecture, and worship.

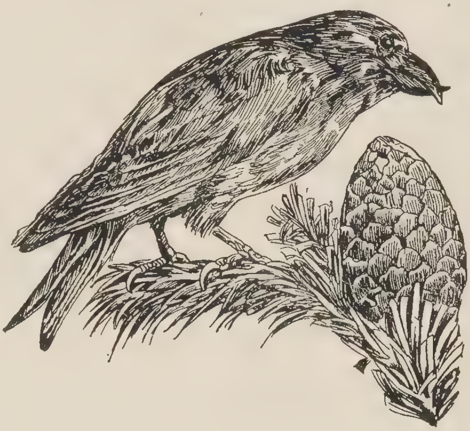
CROSS, Ada Cambridge, novelist, born at Saint Germains, Norfolk, England, Nov. 21, 1844. In 1870 she married George Frederick Cross and sailed for Australia, after which she made her home in the colony of Victoria. She resided at Williamstown, a port of Melbourne, a number of years. Her novels have been widely read and are interesting for their accuracy in portraying human characters. Among her books are "Not All in Vain," "A Marriage Ceremony," "A Marked Man," "In Two Years' Time," "The Three Miss Kings," "Path and Goal," "A Platonic Friendship," and "Thirty Years in Australia."

CROSS, Mary Ann. See **Eliot, George.**

CROSS, Southern, the most conspicuous constellation in the Southern Hemisphere, seen near the Antarctic Circle. At a northern latitude of 30° it is at the southern horizon, but, owing to the haze and fog near the sea, it is not seen clearly north of the Tropic of Cancer. It contains four bright stars, to which Christian association and fancy give the shape of a cross. In 1679 it was added to the list of constellations by Olaus Römer (1644-1710).

CROSSBILL, the common name of several species of birds of the finch family, so named because the tips of the mandibles cross each other. The form of the bill gives them facility to shell pine cones to find the seeds, their principal food. The crossbills are found in the northern parts of North America and the colder parts of Asia and Europe. They attain a length of about seven inches. The male is reddish in color and the female is yellowish-green. Their nests are built in the limbs of trees, where they breed.

CROSS FERTILIZATION, the term used by botanists to describe the fertilization of plants by bringing the pollen from the stamens of a given species in contact with the pistils of another. This is done in the course of nature by insects, birds, or the movement of air. However, the term has a broader signification in the cultivation of plants, since it implies bringing together the generative parts of such flowers as will result in producing the best plants and improving the fruits borne by them. In-and-in breeding among animals is known to sterilize and degenerate, while cross breeding tends to so combine temperaments and physical structures that the offspring may be improved. This is true in a great measure with plants, and those interested in their culture single out the best species so as to have a combination of the stronger and better specimens.


CROSSBILL.

Cross fertilization in plants, like that in animals, must be guarded with considerable care, since species of vastly different characteristics do not produce the most healthful and serviceable offspring. Perhaps this is better illustrated in the human race, where crosses between individuals of vastly different races, such as the Caucasian and Ethiopian, do not result in an advantage to the race more highly developed. Bees, humming birds, and many insects are a prolific source of cross fertilization, and where botanists conduct experiments it is necessary to provide protection against their coming in contact with plants.

CROTON (krō'tŭn), a genus of plants which include herbs, shrubs, and trees. They occur in the warmer parts of both hemispheres. The leaves are variable and extremely acrid. Important medicines are obtained from the wood and seeds. Croton oil is expressed from the seeds of a number of species. It is brownish-yellow and has a nauseous taste. In large doses it is a dangerous poison, but in minute quantities it acts as a drastic purgative, often causing vomiting. It is used as a counter irritant for obstinate constipation and accidental poisoning. About thirty species occur in Mexico and the southern part of the United States.

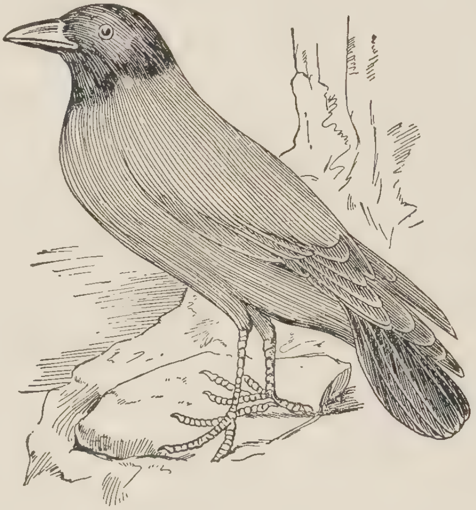
CROTONA (krō-tō'nȧ), or **Croton,** an ancient Greek colony in the southern part of Italy, on both sides of the Aesarus River and on the east coast of the Bruttian peninsula. It was founded by Achaean colonists about 710 B. C., and grew rapidly in wealth and commercial importance. The disciples of Pythagoras became rulers of the city of Crotona about 530 B. C., and the colony furnished a large number of men during the war with Sybaris, about 510 B. C., but the Pythagoreans were soon after expelled. It suffered greatly during the war between the Romans and Pyrrhus, when it was plundered and nearly destroyed, and was overrun by its enemies in the second Punic War. The modern city is called Cotrone.

CROTON AQUEDUCT. See **Aqueduct.**

CROUP (kro͞op), a common disease occurring mostly in young children. It takes the form of an inflammatory affection of the trachea and larynx, and arises largely from exposure to wet and cold and from digestive disturbances. It occurs most frequently at the ages of two and three years, and generally on the fourth or fifth day produces death by exhaustion and strangulation. The two forms of the disease are known as false croup and membranous croup. Both are attended by coughing. In *false croup* the child has a running from the nose and the breathing is labored and noisy. *Membranous croup* is due to the bacillus of diphtheria and is contagious and frequently fatal. Small pieces of membrane are coughed up in severe cases. The operation known as tracheotomy, which consists of inserting a tube into the windpipe below the inflamed tract, is often resorted to in this malady. The tube serves as a means of breathing.

CROW, the common name of any bird of the genus *Corvus,* of which the American crow is the type. The plumage is glossy black, the wings are long, and the beak is conical. About 200 species have been studied. They are intelligent and may be easily domesticated. Nearly all species build their nests on the limbs of trees, near which they perch and utter their harsh but familiar cry. The crow is widely distributed in all the continents and islands. Its favorite food consists of various kinds of carrion, but it feeds on fish, small quadrupeds, grains, and nuts, and delights to rob the nests of other birds and poultry of the eggs and young. Its habits are more or less gregarious, but it is frequently seen by itself or in isolated pairs. The crow of America is smaller than that of Europe, measuring about eighteen inches in length. The *fish crow* is found along the southern coasts, resembling the northern species, but is somewhat smaller. The *rook* is a small-sized species, has a peculiarly bare face, and is quite tame.

The crows are found in climates far north at all seasons of the year, but large numbers move southward in winter to warmer districts. The *hooded crow* has a small black tufted head, which is quite distinguishable from the gray body. It feeds on fish and carrion. Other species are found in Ceylon, where they live in towns, and several are native to New Zealand, New Guinea, and other islands. The *jabbering crow* of Jamaica has a peculiar and active voice.



HOODED CROW.

CROW, the name of a tribe of North American Indians, a branch of the Sioux family. Formerly they inhabited the region of the upper Yellowstone and Missouri rivers, but they are now confined on a reservation in the State of Montana. They were friendly to the whites when the main branch of the Siouxs conducted a warfare against the settlers, and many of them were employed as guides and scouts. At present the total number is about 1,975.

CROWDER, Enoch Herbert, army officer, born in Missouri, April 11, 1859. He studied at West Point and the University of Missouri. In the Spanish-American War he was judge advocate, later served on important missions to Japan and Cuba, and in 1917 was made provost marshal general of the United States. He had charge of the important work of raising the military forces under the selective draft law. In this capacity he rendered sufficient service for the government.

CROWN, the name of a coin issued by several European countries. The English crown was originally a gold coin, first issued in 1527 by Henry VIII., but since 1551 it has been made wholly of silver. It is worth five shillings sterling, or about $1.23 in the money of Canada and the United States. The crown of Sweden, Norway, and Denmark is equivalent to about 26.5 cents, and that of Austria-Hungary has a monetary value of about twenty cents.

CROWN, the ornament worn on the head of princes, kings, and emperors as a badge of sovereignty. Similar ornaments, called *coronets,* are worn by the nobility. The *tiara* is a decoration of the Pope. This custom is of considerable antiquity. The first King of Israel, Saul, wore a crown, and this is true of the King of Ammon. The first Roman sovereign who wore a crown was Tarquinius Priscus, in 616 B. C. In 306 A. D., when Constantine began to reign, he wore a crown. The practice was afterward extended to western monarchs, and later sovereigns were represented with crowned heads on coins. Many of the crowns are of great value. The crown worn by Queen Victoria had 227 pearls, four small rubies, one large ruby, seventeen sapphires, 147 table diamonds, 1,273 rose diamonds, and 1,363 brilliant diamonds. In the crown of the Prnice of Wales are the German words Ich Dien (I serve). The most celebrated crowns are those of Germany and Italy. The former is spoken of as the *silver crown,* but is a wealth of gold and gems. The latter is known as the *iron Lombard crown,* but is of solid gold, except that it contains an iron nail reputed to have been used at the crucifixion.

CROWN LANDS, in America, the lands located west of the English colonies. All of these lands were declared to be crown lands by a proclamation of Great Britain after the Treaty of Paris, in 1763, and they were held as reserves for the Indians and declared to be under the jurisdiction of the home government. The colonists were not permitted to make purchases of, or make settlement in, any of this reserve territory without the royal permission. The several states claimed these lands after the Revolution.

CROWN POINT, a town in Essex County, New York, on Lake Champlain, 110 miles north of Albany. It is on the Champlain Canal and the Delaware and Hudson Railroad. Feldspar mining, apple growing, and dairying are promoted in the vicinity. It has a public library, electric lighting, and a number of churches. Crown Point is noted for the ruins of the fortifications constructed here by the British at a cost of about $10,000,000, although they are now in ruins. Seth Warner, at the head of a company of Green Mountain Boys, on May 11, 1775, captured the fort, which was garrisoned by only twelve men. Population, 1905, 1,890; in 1925, 1,448.

CROWTHER, Samuel Adjai, first negro bishop of Africa, born in Yoruba, Western Africa, in 1812; died Dec. 31, 1891. He was the son of a native named Adjai, was captured by Mohammedan slave traders in 1819, and liberated by the British in 1822, after being sold and exchanged several times. After liberation he was taken to Bathurst, the capital of British Cambodia, where he embraced Christianity in 1825 and assumed the name of an English vicar, by whom he was adopted. He accompanied the Niger expedition in 1841, acted as missionary and was sent to the Church Missionary College of London in 1842, and later was ordained by the bishop of London. In 1854 he accompanied the second Niger expedition, prosecuted missionary work, was consecrated bishop of the Niger Territory, and granted the honorary degree of doctor of divinity by Oxford University. The Royal Geographical Society of London presented him with a gold watch on account of valuable contributions to geographical knowledge. Besides translating a portion of the Scriptures into native languages, he wrote "Grammar and Vocabulary of the Yoruba Language," "Grammar and Vocabulary of the Nupe Language," and "Journal of an Expedition up the Niger and Tshadda Rivers in 1854." A history of this remarkable man was published in London in 1888, entitled "The Slave Boy Who Became Bishop of the Niger."

CROYDON (kroi'dŭn), a market town of England, in Surreyshire, ten miles south of London. It is located on several railway and electric railroad lines, and is a favorite residence suburb for merchants and business men of London. Among the principal buildings are a Gothic church, the Whitgift's Hospital, and a number of fine schools and charitable institutions. The manufactures embrace clocks, cotton and woolen goods, clothing, machinery, and spirituous liquors. Many fine drives and parks beautify the place, which was once the residence of the Archbishop of Canterbury. Its growth is comparatively recent, due largely to the development of many commercial and manufacturing enterprises. Population, 1921, 169,559.

CROZIER, William, inventor and artillery officer, born in Carrollton, Ohio, Feb. 19, 1855. He graduated at West Point in 1876 and was assigned to the Fourth Artillery, with which he took part in campaigns against the Indians. He was instructor of mathematics at West Point in 1879-84 and was made major and inspector general in 1898. President McKinley appointed him a delegate to the peace conference at The Hague in 1899, and the following year he served under Gen. Chaffee as chief ordnance officer in China. His inventions include a wire-wrapped rifle, a ten-inch gun, and the *Buffington-Crozier disappearing gun-carriage.* The last mentioned was invented in conjunction with Gen. Buffington and is used largely by the United States in coast-defense works. In 1917 he was made chief of ordnance in the war department.

CRUCIBLE (kru'sĭ-b'l), a vessel made of material which is capable of holding substances that are to be submitted to a high temperature, such as the material for melting metallic ores or those used in glass-making. The form is circular, conical, or triangular. The material used for making crucibles is either iron, porcelain, graphite, or platinum.

CRUELTY TO ANIMALS, The American Society for the Prevention of, an organization incorporated April 10, 1866. It was the first society organized in America for the protection of animals. Henry Bergh was the founder and first president, and to his tireless energy and self-sacrifice the laudable work of protecting animals in a systematic way owes its origin. Through the efforts of this society the first law enacted in America for the protection of animals was passed by the Legislature of New York. The example was followed by the legislatures of other states, thus leading to much good in the care, use, and protection of all kinds of domestic animals. Branch organizations are now maintained in many parts of the United States and in other countries of America and the Eastern Hemisphere. Many cases have been attended by the society and its agents. The object is to prosecute offenders in the courts, temporarily suspend disabled animals from labor, humanely destroy animals that are past recovery, investigate complaints, and provide ambulances for the removal of disabled animals from the streets and highways for medical attendance. *Our Animal Friends,* a monthly magazine, is the official organ of the society, through which knowledge and interest is disseminated.

CRUELTY TO CHILDREN. See **Children, Society for the Prevention of Cruelty to.**

CRUIKSHANK (krŏŏk′shănk), **George,** pictorial satirist, born in London, England, Sept. 27, 1792; died Feb. 1, 1878. Both his father and eldest brother were cartoonists. At first his designs were for the stage, but he was induced by a publisher to engage in making sketches for children's books and as illustrations of songs. His first sketches for publication in periodicals were made in 1811 for *The Scourge,* on which publication he was employed five years. He engaged with the *Humorist* for a long period of years, beginning in 1819, and contributed to various other periodicals and publications. Among his most celebrated etchings were those of "Peter Schlemihl," Grimm's "German Popular Stories," Clark's "Three Courses and a Dessert," Dicken's "Oliver Twist," and Brough's "Life of Sir John Falstaff." The last work produced by him is the frontispiece to Mrs. Blewitt's "The Rose and the Lily." A number of his designs were devoted to an earnest protest against drunkenness, the most celebrated being the series of "The Bottle." He produced a number of excellent oil paintings, the most important being "The Worship of Bacchus."

CRUSADES (kru̦-sāds′), the expeditions and wars conducted by the Christians of Europe to uphold the rights of pilgrims at Jerusalem, and ultimately to establish a firm foothold for Christianity in Asia. The Crusaders wore a cross made of white, red, or green woolen, sewed on the right shoulder of the dress, as a signal that they fought for the interests of the *Cross* as against the *Crescent* of the Moslem. Jerusalem and the Holy Sepulcher fell into the hands of the Mohammedans in their early conquest of Palestine. Notwithstanding, the Christian pilgrims still thronged to the Holy Land to worship on the scenes frequented by the Savior.

During the ascendency of the Saracens in the East the Christians were shown tolerable kindness, largely as a matter of policy, but when the Turks secured dominion widespread outrages were perpetrated. Many expeditions of pilgrims were insulted, pillaged, or murdered. The returning remnants spread complaints of Turkish insolence and barbarity throughout Europe, causing intense excitement and solicitude in the various nations. That they should be driven from the region embodying the most sacred interest of Christians, and the places of concern be occupied by a class foreign and adverse to everything pertaining to their spiritual welfare, led to a widespread desire to depose the Turks and establish Christianity on a firm basis in the East. The first general agitation of a Crusade to the Holy Land began in the latter part of the 10th century, when Pope Sylvester II. attempted to induce the Christian world to succor the afflicted of Jerusalem, but to this call only a feeble support was given by the people. However, later there were no less than eight great movements, including the *Children's Crusade,* to accomplish the object desired.

I. The first Crusade was induced largely by the agitation of Peter the Hermit, who traveled throughout Europe for that purpose and aroused general interest in the project. He was aided by Walter the Penniless and others interested in various parts of Europe. The Crusaders under Peter the Hermit numbered about 40,000, and under Walter the Penniless about 20,000, and besides these were about 15,000 Germans and various smaller organizations. As a whole, the participants were illy prepared, impatient, and poorly equipped to enter upon such an expedition. Later a stronger organization was led by Godfrey of Bouillon, Duke of Lorraine, and his brother Baldwin, Count of Flanders, aided by several others. Nice was taken in 1097; Antioch, in Syria, in 1098; and Jerusalem, in 1099, where a Christian kingdom was established with Godfrey of Bouillon as sovereign. Soon after the Battle of Ascalon was fought, in which he defeated the Sultan of Egypt. The first Crusade dates from 1096 to 1099. Palestine was in the hands of the actors of this Crusade for fifty years. During their dominion the two great military and religious orders were formed—the Knights of Jerusalem and the Knights Templar.

II. The second Crusade was undertaken in 1147 and ended in 1149. It was signaled by the fall of Edessa into the hands of the Mohammedans in 1144. Following this Bernard, abbot of Clairvaux, traveled over Europe preaching a second Crusade much as Peter the Hermit had preached the first. In 1147 Conrad III., Emperor of Germany, and Louis VII., King of France, took up the cross and started upon a

Crusade with more than 300,000 soldiers. They passed through Germany, Hungary, and over the straits into Asia. By the unfriendly schemes of Manuel, the Emperor of East Constantinople, the plan was frustrated and proved an entire failure. Conrad was defeated in the mountains of Cappadocia and returned in despair to Constantinople. Louis gained a slight triumph over the Saracens on the banks of the Meander and struggled on through storms and famine until he reached Antioch. There he was joined by Conrad. They united their forces and entered Jerusalem, but failed in their siege of Damascus.

III. The third Crusade dates from 1189 to 1192. It was agitated for a number of years, finding its greatest support in Italy, Germany and France. When the report was spread throughout Europe that Jerusalem had fallen before Saladin, the Sultan of Egypt, and that the golden cross which had glittered on the Mosque of Omar for 48 years had been trampled in the streets, the enterprise was assured. The Italian contingent sailed to relieve the Christians in the siege of Acre, which had yielded to Saladin. Later Richard I., of England, Frederick Barbarossa, of Germany, and Philip Augustus, of France, led large armies into Asia Minor. The armies of Philip and Richard were weather-beaten and sorely pressed, only 5,000 reaching Acre. A detachment sailing under Richard for the Holy Land was divided by a storm and driven to Cyprus. Jealousies arose between Richard and Philip, after which the latter returned to France and the former was successful in several engagements by which he excited the admiration of the Saracens. A truce followed for a time with Saladin, in which the latter was left potentate in possession of Jerusalem.

IV. The fourth Crusade was brought about largely through the efforts of Pope Innocent III., and covers the period between 1195 and 1197. In these expeditions the Western Christians captured Constantinople from the Greeks in the East and founded a Latin kingdom which endured fifty-seven years. During the siege of Constantinople many precious works of art were destroyed and much of the city was burned. The purpose was to build up a permanent power against the Moslems but in this the enterprise failed.

V. The fifth Crusade dates from 1198 to 1204. It resulted in a second siege of Constantinople terminating to the advantage of the besiegers. Baldwin, Count of Flanders, was elected emperor over one-fourth of the Eastern dominions and the remaining portion was divided between the republic of Venice and the barons of France. In the meantime the *Crusade of Children* was organized in 1212. About 30,000 boys and girls of France and 40,000 of Germany crossed the Alps and pushed forward with the expectation that the Moslems would embrace Christianity by miracles. Large numbers of them became discouraged and returned home, while others perished, were sold into slavery, or lost at sea. Frederick II., Emperor of Germany, proceeded to Jerusalem in 1227, where he secured a treaty with the Sultan of Egypt without expenditure of human life, under which he was crowned King of Jerusalem. However, he returned to Germany in 1229.

VI. The sixth Crusade was conducted by Louis IX., King of France, from 1248 to 1254. He was taken prisoner in Egypt, but secured his release by paying an enormous ransom. From Egypt he went to the Holy Land, where he built a number of forts, but soon returned to France.

VII. The seventh Crusade was started by Louis IX., of France, in 1270, but he died of pestilence in Tunis. He had been associated with Prince Edward of England, later Edward I., who landed at Acre in 1271. Nothing was accomplished aside from a truce of ten years. Subsequently several other efforts to secure a permanent foothold were made, but they were greatly weakened by those undertaken in the early period of the movement. The Latin kingdom of Jerusalem expired in 1291.

The most important events of the Crusades include the capture of Jerusalem by the Crusaders in 1099. It was retaken by Saladin in 1187, restored to the Christians by a truce in 1227, and taken by the Turks in 1239. The empire founded by the Crusaders expired with the capture of Acre by the Sultan of Egypt in 1291. The Crusades with their attendant interests were promoted about two centuries and had a marked impression upon the several kingdoms of Europe. Immense sums of money were spent without securing productive returns, millions of lives were lost, and marked changes were wrought in the habits and customs of European nations. After these conflicts were over, attention again turned to commerce, the laboring classes receiving a new impulse. During this period the germs of new ideas were sown in inquiring minds, and bigotry and imperialism rapidly diminished. While attended by some elements of harm, they broke up old feudal systems and paved the way for vast commercial and industrial enterprises.

CRUSTACEA (krŭs-tā'shē-ȧ), a class of aquatic arthropods, so named from the hard armor which covers the whole body. About ten thousand species are included in this group of animal life. The shell of the body is jointed, forming the principal part of the skeleton, and each joint or segment of the body has a pair of jointed appendages. Two of the appendages are usually modified into antennae or feelers, below or back of which is the apparatus for eating. The higher classes have the bodies divided into three parts: the head, thorax, and abdomen. All are oviparous and the sexes are distinct in most species. The crust or shell is cast off in one piece when it gets too small for the growing body and a new one better fitted develops. Limbs lost by accident or in combat are replaced by new growth in a short time. The outer hard shell consists of many parts and allows movements by being jointed much like the joints formed by cartilages in higher forms of life. Some species of the crustacea have compound eyes borne upon long stalks, a pair of jointed feelers, and gill-like appendages for breathing. Various species occur in the seas, in fresh water, and on land. Fossil remains of these animal forms have aided greatly in studying the age of strata. Among the familiar examples of the living crustaceans are the lobsters, crawfishes, barnacles, and shrimps.

CRYOLITE (krī'ȯ-līt), a compound of sodium, aluminum, and fluorine, so named from its fusibility in the flame of a candle. In a pure state it is snow-white, partially transparent, and has a vitreous luster. It is used in the manufacture of soda and in making a beautiful glass somewhat resembling porcelain, and is a source of sodium hydrate, sodium carbonate, and other salts. Cryolite is found chiefly near Arksuk, Greenland, and in El Paso County, California.

CRYPT (krĭpt), a chamber under a church or beneath a monument to receive the bodies of the dead. Originally the term was applied to a subterranean chapel in the catacombs and later it designated a room near the confessional, of which it was an extension or enlargement. Crypts were constructed very largely in the churches from the ninth to the thirteenth century and many are of beautiful construction. The crypt under the cathedral at Glasgow, Scotland, is one of the finest examples. Others of note include those in the Cathedral of Canterbury, the Church of Saint Mark at Venice, the Cathedral of Strassburg, Germany, and the Sainte Chapelle, Paris.

CRYPTOGAMOUS PLANTS (krĭp-tŏg'ȧ-mŭs), or **Cryptogams,** the name applied by Linnaeus to all the plants that do not reproduce by flowering. The seed-bearing plants, to distinguish them from the crytpogams, are usually called *phanerogams.* Formerly it was thought that the distinction between the two classes should be based upon the theory that the crytogams reproduce by spores and the phanerogams by seed, but this view is not correct, since both groups include representatives that produce spores, but the former do not produce seeds.

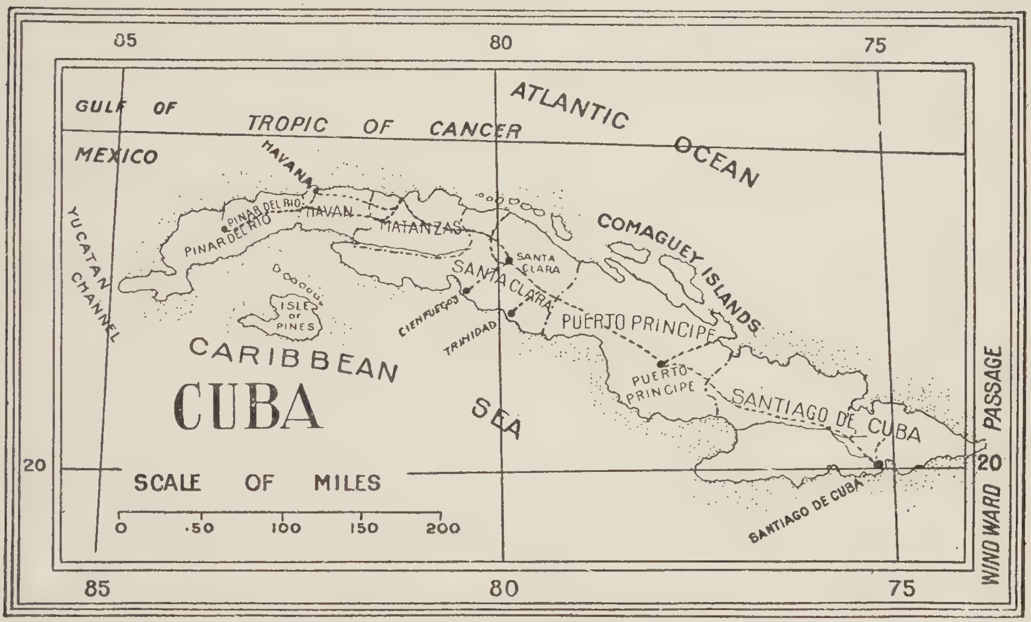
CRYPTOGRAPHY (krĭp-tŏg'rȧ-fȳ), a system of writing with sympathetic ink, or with secret characters or ciphers. The most common method is to choose a sign or mark for every letter of the alphabet, using the substituted characters in committing the subject-matter to writing.

CRYSTAL (krĭs'tạl), in mineralogy and chemistry, the solid mathematical form which a chemically homogeneous body tends to assume by undisturbed and mutual attraction of its particles. Crystals may be developed by dissolving crystalline bodies in water, alcohol, or other fluids, and then abstracting the fluid by evaporation. Crystalline forms occur largely in nature. The study of their structure and the laws by which they are formed is called crystallography, which is an essential division of mineralogy.

CRYSTALLOGRAPHY (krĭs-tạl-lŏg'rȧ-fȳ), the science of crystallization, which investigates the system of form among crystals, and treats of their structure and method of formation. A crystal is bounded by plane surfaces, which have a symmetrical arrangement around certain imaginary lines called *axes.* Crystals are formed in all inorganic substances when solidifying, whether natural or artificial, and many thousands of forms are thus produced. Since the qualities of crystals depend directly on the forces of the ultimate molecules or particles of matter, crystallography constitutes an important department of molecular physics and is concerned in the study of cohesive attraction. All solidification in inorganic substances is crystallization, hence cohesive attraction in solidification consists wholly of crystallogenic attraction.

The very numerous forms of crystals may be classified under six systems. 1. The *monometric system,* in which the crystals have three lines or axes of equal length, hence are of one kind, include such crystals as are formed by silver, gold, iron pyrites, and common salt. All the forms of this system are symmetrical. 2. The *diametric system* has axes of two kinds, the lateral axes being equal to each other, but differing in length from the vertical axis. Under this system crystallization is in the form of square octahedrons, equilateral eight-sided prisms, eight-sided double pyramids, and in a number of other forms. Among the examples are the crystals of tin idocrase and calomel. 3. The *trimetric system* includes the forms in which the vertical axis is unequal to the lateral and the two lateral axes are unequal to each other, hence the three axes are all of unequal length. The crystalline forms are right rhombic prisms and rhombic-based octahedrons. The examples include topaz, sulphur, epsom salt, and heavy spar. 4. The *monoclinic system* includes the crystals in which two of the axes are at right angles to each other and the third is inclined. All the axes are of different lengths and the crystals are oblique rhombic prisms. Copperas, borax, sugar, and carbonate of soda crystallize according to this system. 5. The *triclinic system* includes the crystals that have three axes of unequal length, all the three intersections being oblique. The forms are oblique prisms contained under rhomboidal faces. The crystals of this system include those of sulphate of manganese and blue vitriol. 6. The *hexagonal system* includes the regular hexagonal prisms, in which the vertical axis connects the centers of the bases, and the three lateral axes join the centers of the opposite lateral faces or edges. It also includes the rhombohedron and its derivative forms. Among the crystals are those of many kinds of limestone and emerald.

CUBA (kū'bȧ), a republic in the West Indies, on the island of Cuba, the largest and most important of the Greater Antilles. It is situated mainly between latitudes 19° 20′ and 23° 8′ north and longitude 78° and 85° west, and between the Gulf of Mexico and the Caribbean Sea. The coast line is very extensive, containing numerous inlets and safe harbors. The northern coast is about 818 miles long and the southern 972 miles, the former having thirty-two harbors and the latter twelve. From east to west the island has a length of 760 miles, with an average width of eighty miles, and the area, including a number of small islands, is 45,881 square miles.



Description. A range of mountains extends from southeast to northwest across the island, known as the Copper Mountains, which vary in height from 1,000 to 4,000 feet. The most elevated summits are in the southeastern part, where Turquino, the culminating peak, rises to a height of 8,320 feet. Low and marshy lands lie west of Cape Cruz, near which is located the great Zapota swamp. Coral islands or reefs border the northern coast.

Cuba has no large rivers, but its streams that may be classed as rivers exceed 150 in number and only few of these are navigable. The Cauto, wholly in the province of Santiago de Cuba, is the largest stream. It is about 150 miles long and is navigable for a distance of fifty miles. The climate is variable inland, but along the coast it is very equable. At Havana the rainfall is about fifty inches and in the northeastern section it ranges from 80 to 100 inches, but the southeastern region has a smaller precipitation. The winter season is marked by copious rainfall, but is not cold, while the summer breezes modify the temperature and render it quite pleasant in all portions. In summer the thermometer rarely rises above 90° and seldom falls below 85° in winter, but the mountainous regions have a lower temperature in winter, though rarely less than 50°. Normally the climate is healthful, but sickness prevails along the low coasts and in the marshy districts.

Cuba has a tropical vegetation and many of the plants are luxuriant. The prairies abound with nutritious grasses and fully one-half of the surface is covered with forests, including the palm, mahogany, cedar, lignum-vitae, logwood, rosewood, acana, and Cuban ebony. Many species of fruit are native or have been naturalized. Animal life is abundant, especially birds, of which there are more than 200 species. They include the vulture, grouse, snipe, quail, wild turkey, and many birds of song. The reptiles are represented by the alligator, lizard, tree toad, and turtle. Many species of insects abound, including the scorpion, tarantula, firefly, ant, and a limitless number of others. The rabbit, bat, cat, and domestic animals are well represented. The waters of Cuba are rich in fish, including about 650 species.

Mining. Iron is found in the province of Santiago de Cuba, where it is mined in large quantities. The output is about 575,000 tons annually, nearly all of which is exported to the United States. Asphalt, an important product, is obtained chiefly in the vicinity of the Bay of Cárdenas. Copper has been mined profitably for many years and prior to the discovery of the deposits in the United States it was exported largely for use in the American manufacturing enterprises. Salt, gold, silver, petroleum, manganese, and a number of other minerals are found in paying quantities.

AGRICULTURE. Owing to the genial climate and general fertility of the soil, agriculture is the leading industry. Many of the cultivated fields have been tilled fully 200 years without artificial fertilization and their riches have not been perceptibly affected. Much of the land is divided into small tracts, ranging from eight to twenty acres, and few of the holdings exceed 100 acres, except in localities where larger plantations are managed by white owners. Nearly half of the farmers are colored tenants, who are confined almost exclusively to small tracts of lands. Agriculture was set back materially during the war with Spain, in 1897, but at present it is conducted with much profit.

Sugar cane has been cultivated since 1523 and takes rank as the most important product. The sugar plantations are operated on large holdings, usually several thousand acres, and they are equipped with private railways, plants to manufacture sugar, and numerous buildings for the occupancy of the laborers. Tobacco takes rank next to sugar as an important crop, and it has been cultivated with considerable success since 1580. The provinces of Havana and Santa Clara are the chief centers of the tobacco fields. Maize is cultivated in all parts of the island and rice is grown extensively, but the latter does not yield sufficient for domestic consumption. Wheat and oats are not cultivated extensively, but vegetables, especially sweet potatoes, are grown in all parts of the island. Cocoanuts, lemons, limes, mangoes, guavas, figs, oranges, and pineapples are cultivated abundantly. Cattle, horses, swine, sheep, and poultry yield large returns.

MANUFACTURES. Sugar and tobacco products are the principal manufactures. The former consists chiefly of raw sugar and is made on the plantations largely as an adjunct of agriculture. Havana is important as a manufacturing center of cigars and smoking tobacco, large quantities of which are exported. Other manufactures include clothing, rum, flour, cordage, fabrics, and earthenware.

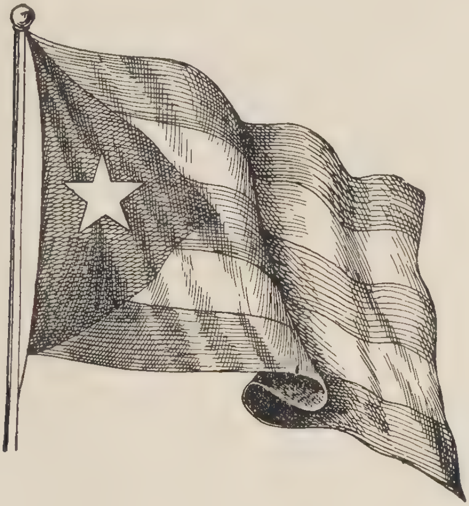
COMMERCE AND TRANSPORTATION. Havana, the principal seaport, is the focus of many routes in steamship navigation and is touched by numerous transatlantic routes. Cienfuegos and Santiago de Cuba, both on the southern coast, are the centers of a growing foreign and interior trade. The exports somewhat exceed the imports, and most of the foreign trade is with the United States, Great Britain, and Germany in the order named. Railroad construction has advanced rapidly within the last two decades. Lines traverse the island from Pinar del Rio in the west to Santiago de Cuba in the east, connecting all the more important cities. The lines aggregate a total of 1,700 miles, though some are in a poor condition, and about 4,500 miles of telegraph lines are in operation. Comparatively little has been done in constructing wagon roads, which are in a poor state of development.

EDUCATION. The constitution provides for free and compulsory attendance upon primary schools, which are maintained by the provinces and municipalities, but the central government may bear the expense in localities where the people are unable to make ample provisions for instruction. Secondary and higher education is under control of the state and culminates in a university at Havana. A large number of teachers from Cuba received normal training in the United States after the organization of the republic, and since then considerable progress has been made in public instruction. Many private and parochial schools are maintained, owing to the fact that the inhabitants are largely Roman Catholics.

INHABITANTS. The province of Havana is densely populated, having 187 persons to the square mile. About seventy per cent. of the people are white, and the remainder are negroes, mixed elements, and Chinese. Nearly half engage in agriculture, about one-fifth in domestic service, and one-seventh in mechanical and manufacturing pursuits. Havana, the capital, is the largest city and most important commercial center of the West Indies. Santiago de Cuba, Cienfuegos, Matanzas, Pinar del Rio, Cárdenas, and Puerto Princípe are among the leading cities. The last two censuses were taken under the direction of the Secretary of the Government, in 1911 and in 1919, from which the following table has been prepared:

PROVINCES.	POPULATION, 1911.	POPULATION, 1919.
Havana	576,546	697,583
Pinar del Rio	254,620	266,198
Matanzas	259,841	312,704
Santa Clara	514,325	657,697
Puerto Principe . (Camaguey)	135,340	228,913
Santiago de Cuba (Oriento)	482,612	735.810
Total	2,223,284	2,898,905

GOVERNMENT. Cuba is governed under a constitution adopted in 1901, by which the administration is vested in a president, who is elected by manhood suffrage for a term of four years and is limited to a service of not more than two consecutive terms. It is required that the president be a native Cuban or a naturalized citizen who served not less than ten years in the Cuban army during the wars for independence. The members of his cabinet, who are responsible to him for the administration of their offices, are appointed and removed at his pleasure. A congress of two departments, the senate and house of representatives, has full legislative power. The former is composed of twenty-four senators, that is, four from each province, elected by an electoral board of the provincial councilmen and electors, and hold office for a term of four years. Representation in the lower branch of congress is on a basis of one member for every 25,000 inhabitants, or a fraction of more than 12,500, and the term is for four years, one-half retiring every two years. Congress, which meets annually, has general control of the finances and foreign affairs, and has legislative power in matters concerning the republic. The chief judicial power is vested in a supreme court, members of which are appointed by the president subject to confirmation by the senate. Citizenship was extended to all Cuban and Spanish residents who were on the island Sept. 11, 1899, and to all foreigners who resided here since Jan. 1, 1899, and those not included in these classes may acquire citizenship by naturalization, which requires a residence of five years.


FLAG OF CUBA.

The six provinces of Cuba are Havana, Pinar del Rio, Santa Clara, Matanzas, Puerto Princípe, and Santiago de Cuba. Each of these has the power to legislate and administrate in regard to matters of local concern, but their laws and administration are subject to the constitution of the republic. Members of the provincial assemblies as well as the governors are elected by popular vote. Spanish is the official and spoken language, but it is mixed somewhat with native dialects.

History. Cuba was discovered by Columbus in 1492 while on his first voyage to America. It was first named Juana in honor of Prince John, son of Ferdinand and Isabella, and later received the name of Fernandina. Afterward its name was changed to Santiago in honor of the patron saint of Spain, and still later to Ave Maria in honor of the Virgin Mary. The name applied to it at present is the one by which the natives knew it at the time of its discovery. The aboriginies were a peaceful, semisavage people, who lived in tranquillity and possessed some degree of development in rude industry and a primitive form of religion. Columbus revisited the island twice after its discovery, in 1494 and in 1502. Diego Columbus, son of Christopher, organized an expedition of 300 men under Diego Velasquez and founded the first permanent settlement in 1511. The first settlements in Santiago and Trinidad were formed in 1514, and the present city of Havana was founded in 1519. In the first quarter of the 19th century all the continental colonies controlled by Spain secured their independence, but Cuba and Porto Rico remained faithful to the mother country. Many of the Spaniards remaining loyal to the mother government left the continental possessions and took refuge in these islands, thereby enriching them with their skill, energy, and capital. The cultivation of sugar cane and tobacco was early developed, and, with the income of large capital and superior skill, made rapid progress, soon replenishing the coffers of Spain, which had been drained by continuous foreign wars.

The colony of Cuba was a seat of contention whenever Spain engaged in war with European countries. Havana was destroyed in 1534 and again in 1554 by the French. The Dutch captured it in 1624 and the English in 1762. Beginning in 1810, it was governed by a foreign captain general. Excessive taxation and other differences caused numerous dissensions, which led to a rebellion in 1836 and to insurrections in 1844 and 1848. A number of parties in the United States coveted the possession of the island, particularly the slave-holding interests, and offered to buy it with the intention of making it a permanent possession. In 1850-51 Narciso Lopez was assisted by adventurers, known as filibusters, from the United States, in an attempt to seize the island, but the expedition was expelled by the Cubans. The United States issued the Ostend Manifesto in 1854, which declared that the island would be seized if Spain refused to sell it. Soon after a strong party for liberation from Spain was formed, and Maximo Gomez conducted a war for Cuban independence during a period of ten years, beginning in 1868. It was terminated by the Elzanjon Treaty in 1878 with the acting captain general, Martinez Campos. The treaty provided for the early abolition of slavery and guaranteed certain personal and political rights to the Cubans. Slavery was abolished in 1886, but the policy of Spain remained as before in the interest of the mother country, rather than for the benefit of the colony.

Conditions rapidly formed that led to the Cuban revolution of 1895. The native patriots were aided by the Cuban exiles, the latter having their headquarters at New York. Secret preparations were carried forward with remarkable rapidity, arms and ammunition were smuggled into Cuba, and a formal declaration of war was made Feb. 24, 1895. The revolutionary forces were placed under the command of Maximo Gomez, who was supported with alacrity by the negroes and by the inhabitants of Porto Rico. The warfare carried on by the revolutionists partook of a guerrilla form, being mostly raids upon plantations and cities. Afterward the forces fell back into the mountain districts, where they were secure against Spanish troops, but came forward successively with surprises to the Spaniards. Antonio Maceo landed in Cuba in the spring of 1895 and was hailed with much enthusiasm by the patriots. The total forces of the Spaniards numbered 200,000, while the insurgents had about 60,000. Gen. Valeriano Weyler, governor general, carried on the war with much cruelty, whereby needless loss of property and life was occasioned. The people of the United States manifested a decided feeling of friendliness toward the patriots, who were struggling for liberty as the early colonists had done in 1776. This occasioned a feeling of hatred on the part of the Spanish sympathizers against the United States, and culminated in the destruction of the United States battleship *Maine* then on a friendly visit to Havana, by a submarine mine, on Feb. 15, 1898, in which 262 men and officers lost their lives. A commission to investigate the conditions surrounding the destruction of the *Maine* was appointed by the President of the United States, and the report following the investigation intensified the feeling of hostility. War was formally declared on April 21.

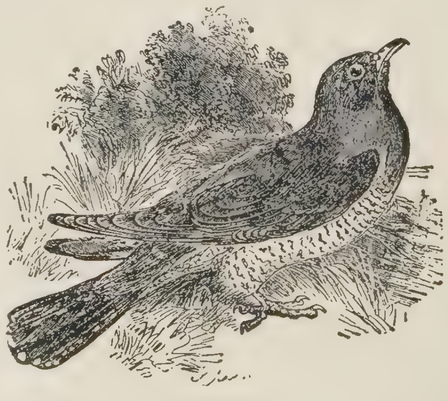
The first decisive engagement of the Spanish-American War resulted in the destruction of the Asiatic fleet of Spain at Manila, in the Philippines, on May 1. On July 3 the strongest fleet of Spain was destroyed at Santiago by the Americans, Rear Admiral Schley commanding in action. Gen. Shafter laid siege to Santiago with the United States army and fought a decisive battle on July 1. Gen. Toral surrendered his army of 25,000 men to the Americans on July 17. The surrender of the remaining portion soon followed and the final treaty of peace was signed at Paris on Dec. 10, 1898. By its terms Spain ceded Porto Rico to the United States and relinquished all sovereignty over Cuba and the Philippine Islands. As a partial consideration to secure the relinquishment of the latter, the United States paid $20,000,000. The treaty was ratified by the Senate on Feb. 6, 1899, by a vote of sixty-one yeas to twenty-nine nays, one vote more than the two-thirds majority requisite.

The first president, Tomas Estrada Palma, was elected in 1901, and the United States, having exercised supervisory functions in aiding to establish the government, withdrew formally on May 20, 1902. He was reëlected to the presidency in 1905, and the following year his chief opponent raised an insurrection and tried to overthrow the government. The rebellion operated to destroy social order and render the national army powerless, hence the United States intervened. President Palma resigned and Charles E. Magoon (born in 1861) administered the affairs as military governor under the direction of the United States. This condition continued until January, 1909, when José Miguel Gomez, a member of the Liberal party, was inaugurated as president. Mario Menocal was elected in 1912 to succeed him as president. Cuba declared war against Germany and Austria-Hungary in 1917. Gerardo Machado became president in 1925, for the term ending in 1929.

CUBE, in geometry, a solid body with six equal square faces. A body in which the volume is one cubic inch has six equal faces, each of which is one inch square. The volume of a cube is found by multiplying the length by the breadth and the product by the height; thus, 27 is the cube of 3, being equal to 3x3x3. The number which is thus multiplied to make the cube is called the *cube root*. The problem of the duplication of the cube, or of constructing a cube of twice the volume of a given cube, is a famous mathematical problem which interested geometers in the time of Plato.

CUBEBS (kū'bĕbs), the berries of a perennial plant of the pepper family, native to New Guinea and the West Indies. The berries are gathered before they ripen, and when dried are about the size of small peas and have a dark brown color. They yield a volatile oil, wax, resin, and cubebic, all of which are used in medicine, chiefly to treat indigestion, chronic catarrh, and affections of the mucous membrane.

CUCKOO (ko͝ok'o͞o), a widely distributed genus of birds which belong to the climbers. They are most abundant in Eurasia and Africa, though a considerable number of species occur in America. The species of America are distinguished from others in that they hatch their own eggs, while those of the old world lay their eggs to be incubated in the nests of other



CUCKOO.

birds. Their custom is to lay one egg in the nests of a number of birds, preferring the yellow-hammer, titlark, hedge sparrows, green linnets, and water wagtails. The young usually seek to monopolize the nests of their foster parents. It requires about five weeks to develop the bird sufficiently for fledging. The color of most species is ashy-gray, the belly is white, the tail is spotted, and the legs are light yellow. The African cuckoo attains a length of about fourteen inches. Its peculiar *coo-coo* cry heralds its return in the spring. The food consists of dragon flies, moths, caterpillars, and other insects. There seems to be a preponderance of males as compared with females in the ratio of about four to one. The species of the old world reach Central Europe in April from Northern Africa. The American species are about twelve inches long, and olive-green in color, and are found more or less widely distributed over the entire continent. In the spring they penetrate far into Canada, but move southward to winter in the warmer regions of the continent and in the West Indies.

CUCUMBER (kū'kŭm-bẽr), a genus of plants distinguished by their heart-shaped leaves, trailing stems, and conisexual male and female flowers in the axils of the leaf stalks. They are native to Egypt and the southern part of Asia, but were brought to Western Europe during the Crusades and to America shortly after its discovery. Several species form an important food product, both for use in the fresh state and for pickling purposes. The fruit product is valued only in an immature or green state, turning yellow and tough at maturity. The plant is attacked by the grub of several insects known generally as *cucumber beetles*, and both the young and the mature insects feed upon the leaves of the vine.

CUCUMBER TREE, a forest tree native to North America, so named from its fruit, which resembles a small cucumber. The tree grows to a height of from sixty to ninety feet, has a trunk about three to four feet in diameter, and the leaves are ovate and deciduous. The young leaf is downy and of a pale green color, but at maturity it is deep green and from seven to ten inches long. Owing to the lightness of the wood, it is used for making boats and troughs. The cucumber tree is confined to the warmer parts of the Temperate Zone and is found in the eastern section of the United States.

CUENCA (kwân'kȧ), a city of South America, in the Andean tablelands of eastern Ecuador, at a height of 8,650 feet above the level of the sea. It is the capital of the province of Azuay. Next to Quito, it is one of the most important cities, and has a cathedral and university, besides several other noted institutions. It has a considerable trade in minerals and merchandise. The city has a number of modern improvements, including waterworks, a library, and several parks. Population, 1916, 44,484.

CUFIC WRITING (kū'fĭk), an ancient form of Arabic writing, so named from the town of Cufa, in the pashalic of Bagdad. It is supposed to have been introduced in Arabia about the sixth century, when it came into use in writing manuscripts, marking coins, and in placing inscriptions on monuments. Cufic characters were used in copying the earliest editions of the Koran and it continued to be the form of writing until about the tenth century, after which it was used more generally in marking coins and inscriptions.

CUIRASSIER (kwē-rȧs-sēr'), a soldier armed with a cuirass. This armor consists of a breast and back plate, lapping on the shoulders and buckled together beneath the arms. It has remained in use longer than any other form of defensive armor for the body and is still used in the heavy cavalry of some armies of Europe. The early cuirass employed by the Greeks was of linen, while the Romans made this armor of flexible bands of steel. Several regiments of cuirassiers were organized by Napoleon and maintained for effective service. A body of French cuirassiers swept across the plain to embarrass the British army in the first Battle of Waterloo. Cavalry equipped in this way is maintained by most European powers as an essential part of their armies.

CULBERSON (kŭl'bẽr-sŭn), **Charles A.,** public man, born at Dadeville, Ala., June 10, 1855. His father, David B. Culberson, was prominent as a Congressman from Texas for twenty-two years. The son studied at the Virginia Military Institute, where he graduated in 1874, took a course of law at the University of Virginia, and subsequently settled in Texas. In 1890 he was elected attorney-general of the State, became Governor in 1894, and attended many of the Democratic national conventions. He was elected to succeed Roger Q. Mills in 1899 as United States Senator and was reëlected three times, serving until 1923. He died Mar. 19, 1925.

CULLEN (kŭl'lĕn), **Maurice Galbraith,** painter, born at Saint Johns, Newfoundland, in 1866. He received his early education in Canada and in 1888 went to Paris, France, to study painting at the Beaux Arts under Delauny. In 1884 he exhibited for the first time at the New Salon. Soon after he returned to America and established his home at Beauport, Quebec, but traveled extensively in Europe and other continents. His paintings are chiefly landscape views and those presenting winter scenes are best known.

CULLODEN MOOR (kŭl-lŏd'e̱n mōōr), a Scottish heath five miles east of Inverness, celebrated for the decisive battle fought on April 27, 1746, between Prince Charles Stuart and the Duke of Cumberland. It was the last battle fought on Scottish soil, and ended all attempts of the Stuarts to recover the throne of England. Prince Charles was the pretender and was supported by a small army of Highlanders, who were in an unfit condition for battle, owing to exertion in marching, and soon fled before the disciplined troops and artillery of the Duke of Cumberland.

CULLOM, Shelby Moore, statesman, born in Wayne County, Kentucky, Nov. 22, 1829. He studied law and practiced at Springfield, Ill. In 1856 he was chosen to the State Legislature, was reëlected four years later, and was elected to Congress in 1865. He returned to the State Legislature in 1872 and became Governor in 1876, to which office he was reëlected in 1880, but resigned Feb. 5, 1883, to succeed David Davis in the United States Senate. He was reëlected for the term ending March, 1885, for the term ending in 1891, for the term ending in 1907, and again for the term ending in 1913. In 1872 he made the nomination speech for Gen. Grant and in 1884 placed Gen. Logan in nomination. His activity in Congress established for him a high reputation among the leading statesmen of America, and his influence in legislation has been effective. In 1898 he served as chairman of a commission of five to consider and report to Congress the questions of government pertaining to Hawaii. He died Jan. 28, 1914.

CULLUM, George Washington, soldier, born in New York, Feb. 25, 1809; died Feb. 28, 1892. He graduated at West Point in 1833, joined the engineer corps, and rose to the rank of colonel. Prior to the Civil War he was engaged in the construction of public works and fortifications at New York City, New London, Boston, New Bedford, and Charleston. At the beginning of the war he became aid-de-camp to Gen. Winfield Scott and later was commissioned brigadier general of volunteers. Subsequently he served as chief of staff to Gen. Halleck and was chief of engineers at the siege of Corinth, erecting many important structures. After the war he was superintendent of the United States Military Academy at West Point, later served on a board of engineers in constructing defenses, and retired from active service in 1874. The remainder of his life was devoted to scientific and military branches and literature. Among his writings are "System of Military Bridges in Use in the United States Army" and "Campaigns of the War of 1812."

CUMAE (kū'mē), a Greek city of ancient Italy, in Campania, ten miles west of Naples. It was situated on the Mediterranean, founded by colonists from Chalcis in Euboea and Cymae in Asia Minor, and was noted for its extensive commerce. Citizens of Cumae built a number of port towns, including Naples and Messina. It was the most important city in the southern part of Italy for 200 years, between 700 and 500 B. C. It was attacked by the Etruscans, who came in contact with it as a maritime power, and it was conquered by the Samnites in 417 B. C. Hannibal failed to capture it in the Second Punic War and it held out as the last stronghold of the Goths in Italy, but was taken in 552 A. D., by the Byzantine army. The Saracens burned it in the ninth century and it was totally destroyed by the people of Naples in 1205.

CUMANÁ (kōō-mȧ-nä'), a city of Venezuela, in the state of Bermudez, on the Gulf of Cariaco. It is located near the mouth of the Manzanares River, in a hot and unhealthful climate, but has a large export trade in sugar, hides, coffee, and tobacco. The chief buildings include a college, a cathedral, and a number of government buildings. It was founded in 1520 and is thought to be the oldest city in America. Near it are several suburban towns, including San Francisco and Serritos. Population, 1922, 15,350.

CUMBERLAND (kŭm'bẽr-land), a city in Maryland, county seat of Allegany County, on the Potomac River and on the Pennsylvania, the Baltimore and Ohio, and other railroads. The chief buildings include the courthouse, the public library, an academy, and the high school. Gas and electric lighting, street railways, waterworks, and pavements are among the improvements. The surrounding country is rich in fertile soil and valuable deposits of bituminous coal. Among the manufactures are flour, ironware, leather, clothing, cigars, machinery, cement, glass, and tin plate. It ranks second in size of the cities of the State. Cumberland was platted in 1785 and incorporated in 1815. The Chesapeake and Ohio Canal contributed to its early growth. Population, 1920, 29,837.

CUMBERLAND MOUNTAINS, a ridge of the Appalachian system, which forms a part of the boundary between Kentucky and Virginia and passes into Tennessee and Alabama. Its highest peaks rise about 2,800 feet above sea level. It is about fifty miles wide, well covered with maple, oak, hickory, chestnut, white ash, and pine timber, and is penetrated by numerous fertile valleys. Its mineral wealth consists of extensive coal, limestone, granite, and sandstone deposits.

CUMBERLAND RIVER, a tributary of the Ohio, rising in Kentucky. Its source is in the Cumberland Mountains, whence it flows toward the southwest into Tenessee, returns to Kentucky, and courses north until its waters unite with the Ohio. The total length is about 650 miles, of which 200 are navigable for steamboats in favorable seasons. A fall of sixty feet is near Williamsburg.

CUMBERLAND ROAD, a highway built by the United States government from Fort Cumberland, Md., to Vandalia, Ill., a distance of 800 miles. Congress authorized the President to appoint three commissioners to lay out the road and appropriated $30,000 to cover the expenses. Work was begun soon after and the road was completed in 1838. The total sum appropriated was $6,821,246. It was known as the Great National Pike and was controlled by the government until 1856, when the control was given to the various states in which the different portions were located. This highway was important as an avenue for emigrants from the Eastern states to the West.

CUMMINS (kŭm′mĭnz), **Albert Baird,** public man, born in Carmichaels, Pa., Feb. 15, 1850; died July 30, 1926. He graduated at Waynesburg, Pa., in 1869, and soon after went to Iowa. Subsequently he studied law in Chicago, and was admitted to the bar in 1875, and for three years practiced his profession in Chicago, after which he opened a law office in Des Moines and attained a reputation by successful work as a lawyer and business man. In 1887 he was elected a member of the State Legislature, and was three times chosen Governor of the State as a Republican, in 1901, 1904, and 1906. He was prominent as a representative of western Republicans for advocating *The Iowa Idea,* a movement favoring the gradual reduction of tariff on imports that do not come in direct competition with American production or are consumed in large quantities. In 1908 he was elected to the United States Senate, and was re-elected in 1914 and 1920.

CUNARD (kū̇-närd′), **Sir Samuel,** founder of the Cunard line of Atlantic steamships, born at Halifax, Nova Scotia, in 1787; died in London, England, April 28, 1865. He was the son of a French Canadian merchant and received instruction for commercial pursuits. In the early development of steamship navigation he obtained a contract with the British government for the mail service, built four steam vessels, and established a regular line of communication between America and England. From this small beginning one of the largest and most important enterprises developed in the course of fifty years, which had prior to that time been unknown in ocean navigation. The first voyage was made from Liverpool to Boston between July 4 and 19, 1840. In 1852 the company substituted iron screw steamers in the place of wooden vessels with paddle wheels. The management and efficiency of the Cunard fleet have always been of the highest character, both in respect to personal security and commercial advantages.

CUNEIFORM (kū̇-nē′ĭ-fôrm), the name applied to various inscriptions that were made by the peoples of remote antiquity. The name is taken from the wedge-shaped characters that prevail largely. It is sometimes referred to as arrow-headed writing, from the resemblance that numerous strokes bear to the head of an arrow. Each of the hieroglyphic characters of the most ancient forms represents an idea or object, like the written characters of the Chinese, but they were corrupted later into forms found on the monuments of Babylon and Assyria. The early Accadians of Chaldaea, who spoke a language allied to the Turkish, invented the system and from them it was borrowed and modified by the Babylonians and Assyrians, who belonged to the Semitic races and spoke a language entirely different. Later it was used by the Persians and other races of Western Asia in a still greater modified state. The oldest form consists of about 700 characters; the remains of antiquity indicating that they were made in a period about 3,000 years B. C. The Accadian language ceased to be spoken about 1700 B. C., but it was employed in these writings for a longer period of time. Subsequent modifications made the characters partake more of the form of an alphabet, thus decreasing them in number but extending the meaning. Since the Persian cuneiform writings are among the latest, they contain about sixty characters, all having divers significations, but as a whole are greatly inferior in scope to the system of the highly cultured originators.

Cuneiform characters were regarded meaningless for centuries. By some they were thought to be the production of corrosive elements, others regarded them as ornaments, while still others looked upon them as records of hidden treasures. Karsten Niebuhr (1733-1815), a German historian and traveler, was one of the first to decipher them and give to them the vast value which they possess in preserving historic records of antiquity. He was followed by others, among them Rask, Grotefend, Lassen, and Rawlinson, by whose labors means of translation were slowly discovered and perfected.

The cuneiform inscriptions of Babylon and Assyria are particularly of value in that they throw light upon the discoveries, achievements, and governments of ancient peoples. Many of the inscriptions are devoted to a history of the reigns and wars of the kings. The Persian are of special interest since they throw light upon the reign of Darius and other Persian sovereigns. For the purpose of study cuneiform inscriptions are divided into four classes, according to the period in which they appear to have been made, the *Archaic, Hieratic, Assyrian,* and *Later Babylonian.* The most celebrated inscriptions are found at Behistun, where large portions of the history of Darius and his ancestors are cut upon the face of a rock 1,700 feet high. As a rule the inscriptions are found on objects made of stone, glass, bronze, clay, and iron. In the museums of Berlin, London, and other cities many excellent specimens may be seen.

CUPID (kū′pĭd), in mythology, the god of love, known to the Greeks by the name of Eros. He is described as a beautiful naked boy, armed with a bow and a full quiver of arrows, with which he kindles a desire for love in the human heart. Sometimes he is represented with a covering over his eyes, indicating that love may be blind. The darts sent from his bow are capable of piercing the birds of the air, the fishes of sea, and even the Olympian gods. He is represented as the son of Mercury and Venus.

CUPOLA (kū′pȯ-lȧ). See **Dome.**

CURAÇOA (ko͞o-rȧ-sō′), an island in the

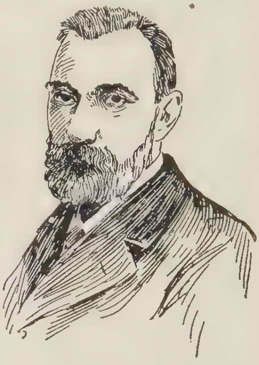
Caribbean Sea, about forty-five miles north of Venezuela. It is forty miles long, eight miles wide, and has an area of 210 square miles. The principal harbor is Santa Anna and Willemstad is the local seat of government. The climate is hot and dry, while the surface is quite hilly and partly barren. Salt, sugar, tobacco, maize, and cochineal are the principal products. This island and Saba, Bonaire, Aruba, Saint Eustache, and a portion of Saint Martin constitute the colony of Holland known as Curaçoa. The entire area is 403 square miles. The government is administered by the Netherlands through a resident governor appointed by the sovereign. These islands were discovered by the Spaniards in 1527, taken by Holland in 1634, and conquered by England in 1798 and again in 1806, but were restored to Holland in 1814. The school system and commercial interests have been developed under Dutch control. A kind of bitter orange growing in these islands, known as Curaçoa, is exported to Holland, where it is used in the manufacture of Curaçoa liquor. Population, 1922, of the island, 31,090; of the colony, 53,466.

CURARE (kû-rä′rê), a poison used by the Indians of South America for poisoning their arrows, made chiefly from the juices of several plants. The principal ingredient is obtained from a tree which yields *nux vomica,* and to this product are added the scrapings obtained from the bark of several plants. Water is added to the component parts and boiled to form a consistence much like syrup. Death results from the poison when it is introduced into the blood, where it acts on and paralyzes the motor nerves, causing paralysis.

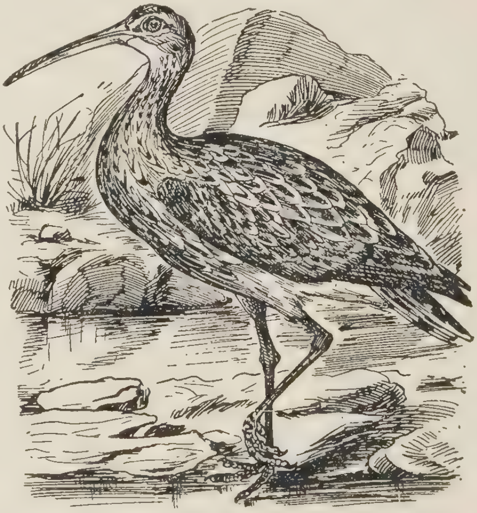
CURASSOW (kû-răs′sô), a large bird native to Mexico and South America, related to the partridges. The bill is strong, surmounted by a cere at the base, the wings are rounded, and in size these birds are similar to the turkey. Several species have been described, of which the *helmeted curassow* is the most noteworthy. It has a bony excrescence on the top of the head, which is bluish in color, and is somewhat larger in the males than in the females. The plumage is glossy black with a greenish hue on the breast. The flesh is eaten and resembles that of the turkey. This bird is reared in Guiana and has been domesticated in continental Europe.

CURFEW (kûr′fū), a signal given to the inhabitants of a town that the time to extinguish fire and lights and to retire has arrived. The usual time for ringing a curfew bell or signal is eight o'clock in the evening. The custom was introduced into England by William the Conqueror, and severe penalties were provided for those neglecting to comply with the requirements. In some countries a bell is rung in a similar manner for the purpose of indicating the time for evening prayer.

CURIE (kû-rē′), **Pierre,** scientist, born in Paris, France, May 15, 1859; died April 19, 1906. He studied at the Sorbonne, where he was granted the degree of doctor of science, and became a teacher in that institution. In 1895 he was made professor of physics and chemistry at the Sorbonne. Later he was appointed to the chair of general physics at the University of Paris, in which position he was succeeded, in 1906, by his wife, Marie Sklodowska, who was born at Warsaw, Nov. 7, 1867. She studied at a lyceum in her native city and at Paris, and for several years was professor of physics at the high school in Sèvres. In 1898 she and her husband announced the discovery of a new radio-active substance having the appearance of nearly pure barium and which became known as radium, the substance that revolutionized modern chemistry. M. and Mme. Curie published a number of books relating to educational and scientific topics.


PIERRE CURIE.

CURLEW (kûr′lū), a genus of birds of the same family as the woodcock and snipe and classed with the waders. The different species are widely distributed in most parts of the world. They inhabit marshy and wet regions. Most species have a bright ash color on the head and breast, with spots of red and white on the back and beneath. The bill is long and well adapted to catching animals under water, such as mollusks, fish, insects, slugs, and earthworms. The greenish eggs are deposited in a


CURLEW.

nest made of dry leaves, usually in rushes. A number of species are prized as food and several in America have migratory habits.

CURLING, a game played with smooth stones, which are shaped somewhat like a teakettle, weighing from 30 to 45 pounds. A handle of iron or wood at the top enables the player to grasp it with a firm hold. Two games are usually played, known as the rink play and as playing for points. The *rink game* is played on ice, upon which a rink about ten yards wide and forty-two yards long is platted. The player endeavors to throw the curling stone as near the mark as possible, as well as to strike off that of his antagonist, in case the latter has thrown first. Two stones are thrown alternately from each end of the course or rink. In the game of *playing for points* there are no sides, but each player throws with the view of scoring for himself. Curling is a Scottish game and is played wherever settlements of Scotchmen are found. Match games played in a series are called *bonspiels*. Several national and international bonspiels are promoted in Canada and the United States. Interesting contests have been held between the champions of the two countries at Ottawa, Montreal, Winnipeg, Minneapolis, Chicago, Duluth, and other cities.

CURRAN (kûr'ran), **John Philpot**, celebrated orator, born at Newmarket, Ireland, July 24, 1750; died in London, England, Oct. 14, 1817. He was educated at Trinity College, London, studied for the profession of law, and began to practice at London. In 1775 he was called to the Irish bar and became distinguished for his humorous, flowery, and sarcastic speeches. He was elected to the Irish Parliament from Kilbeggan in 1782. His support was given to Grattan, and he warmly defended the cause of his Catholic countrymen against the policy of England. In consequence of the government not heeding his appeals, the people promoted the rebellion of 1798. He was a decided opponent of the union of Ireland with Great Britain and regarded such a step highly disastrous to his country. In 1806 he was appointed master of rolls in Ireland, which office he resigned in 1813. He spent his last three years in London and was thrown much into the society of Sheridan, Thomas Moore, and Erskine. His wit, humor, and gaiety made him a favorite member of society and his social qualities were greatly admired by his associates.

CURRANT (kûr'rant), the name of a fruit-bearing shrub cultivated in orchards and gardens for its fruit. It is grown most extensively in the Temperate zones. The different species are hardy shrubs, bearing abundantly under cultivation, and their fruit is valuable for food. It is eaten raw as a dessert and is used in cookery for jelly, preserves, and pies. In some localities it is grown for making vinegar and currant wines. Among the species cultivated largely in America and Europe are the red and white, the latter being a cultivated species of the red. The black currant yields abundantly in the colder regions and in the higher altitudes. Most species of currants ripen in May and June and are improved by training the shrubs against walls. The fruit grows in clustered bunches. The dried currants of market are made from the fruit of a small grape first cultivated on the Isthmus of Corinth, hence its name, but it has been naturalized in various climates. The fruit of this grape is small and is produced abundantly on the vines of the plants. Currant plants are greatly injured in the season when the fruit develops by the larvae of two sawflies. They are commonly called *currant worms*.

CURRENCY REFORM (kŭr'rĕn-sȳ), the policy advocated by a number of political parties in the United States since the early organization of the government as a means to reform the monetary system. It was the leading issue and reached its height of interest in the presidential campaign of 1896. The currency of the United States consists of gold, silver, nickel, copper, and paper money. Gold and silver were recognized as standard money of final redemption in the United States under various laws from the early organization of the government until in 1873, when the use of silver was partly limited by acts of legislation. Partially restored to its former position in 1878, it continued to be used as money with much of its monetary functions recognized until in 1900, when the single gold standard was given the validity of law by Congress. The theory of *bimetallism* and the issuance and control of paper currency by the government were advocated by the Democratic party, while the Republican party advocated a *single gold standard* and the enlargement of the functions of national banks. Partisans on both sides advocated their positions in Congressional and State elections and in Congress, which finally developed a line of national legislation relative to the issuance and control of the currency.

The position of the Democrats was supported by Senator Chandler of New Hampshire and other Republicans, while several Democrats supported the Republican position. The Democrats favored the continuance and use of both gold and silver as standard money. They demanded that the two metals should be coined into money of equal exchangeable value, the equality to be secured and maintained through international agreement, or otherwise, thus maintaining the parity in value of the coins of both metals. It committed the government to the establishment and maintenance of such a system of bimetallism as would insure parity at all times. They also held that the paper currency should be issued and controlled directly by the government, instead of through national banks, and favored the eventual payment of the national debt in coin. The position taken by the Republicans in Congress was favorable to the single gold standard and a modification of the national banking system. That party, having a majority in both houses and the administration, enacted a law favorable to this position. It passed the Senate on March 6, 1900, and the House on March 13, becoming a law on March 14 by the signature of the President.

The law as passed contains ten sections. Among them are the following principal provisions: That the gold dollar of 25.8 grains, nine-tenths fine, shall be the standard unit of value, that all forms of United States money shall be maintained at parity with it, and that all treasury notes and greenbacks shall be redeemable in gold. The sum of $150,000,000 in gold is to be set apart by the treasurer for the redemption of these notes; he is to maintain this fund at not less than $100,000,000, and is empowered to issue United States bonds bearing interest at not over three per cent. The treasurer shall retire and cancel treasury notes equal in amount to the standard silver dollars that may be coined, and issue silver certificates against the silver so coined. Gold certificates shall be issued against the gold held in the treasury under certain provisions. The highest denomination of silver certificates shall by ten dollars, and the lowest denomination of the United States notes and treasury notes shall be ten dollars. The Secretary of the Treasury is authorized to refund the United States bonded debt in 33-year bonds bearing interest at two per cent. The national banks were authorized to issue circulation notes to the face value of the bonds deposited in the national treasury. The law of 1913 created the Federal reserve banks, which may issue currency in denominations of $5, $10, $20, $50, and $100.

CURRENTS, the movements of oceanic waters with considerable regularity from and to the polar and equatorial regions. They resemble streams or rivers, but are much broader, deeper, and longer. Their temperature is either higher or lower than the waters through which they flow. They are formed on the surface and at great depths, the upper currents usually passing from the equator and the lower currents in an opposite direction. Currents are caused partly through the agency of evaporation, but principally by the variation in the density of the waters, owing to a difference between the temperature of the regions of the equator and those near the poles. The equatorial waters, becoming lighter on account of the warm temperature, rise to the surface and flow both north and south, their place being taken by the denser, colder waters flowing in from the polar regions. In this way a constant interchange of the waters is effected between the equatorial and polar regions, which takes place mostly along the bottom from the poles to the equator and along the surface from the equator to the poles. Owing to a low temperature in frozen seas near the poles, the interchange is larger between the equator and the polar circles. These currents would flow due north and south, if the earth had no rotation on its axis. They are deflected from a direct course between the equator and the polar regions on account of the earth's rotation, the position of the land masses, the winds, and differences in the density and level of the sea caused by evaporation.

The currents of the ocean are of utility in commercial and agricultural enterprises. By means of them the climate of the countries located in high latitudes is modified materially by the warm equatorial currents, while the warmer climates in the tropical regions are pleasantly modified by currents from the polar regions. The speed of vessels has been materially increased in certain directions by entering into their paths. Both the Pacific and Atlantic oceans have great equatorial and polar currents, their courses extending between the equatorial and polar circles. In the Indian Ocean the movements are largely restricted to currents which flow southward, owing to there being no outlet toward the north. The Sargasso Sea is in the North Atlantic Ocean. It is a vast expanse of ocean in which seaweeds float upon the surface, owing to the water being undisturbed by extensive movements. The best examples of currents are the Kuro Sivo, or Japan Current, in the North Pacific, and the Gulf Stream, in the North Atlantic.

CURRY, Jabez Lamar Monroe, statesman and educator, born in Lincoln County, Georgia, June 5, 1825; died in 1903. He was educated at the University of Georgia and the law school of Harvard University and began the practice of law in 1845. The following year he enlisted as a private in the Mexican War, served in the Alabama State Legislature from 1848 to 1855, and supported Buchanan as a candidate for President. In 1857 he was elected a member of Congress, but resigned at the beginning of the Civil War to support the Confederate States. In 1861 he was elected a member of the first Confederate Congress, fought in the Confederate army in 1864-65, and the following year, became president of Howard College, Alabama, serving until 1868, when he became professor of law at Richmond College. He was general agent of the Peabody Educational Fund in 1881-85, and in the latter year was appointed United States minister to Spain by President Cleveland and represented that country at the coronation of Alfonso XIII. He published "The Southern States of the American Union," "History of the Peabody Educational Fund," "Constitutional Government in Spain," and "William Ewart Gladstone, a Study."

CURTIN, Andrew Gregg, public man, born in Bellefonte, Pa., April 22, 1817; died Oct. 7, 1894. He studied in Dickinson College and took up the practice of law. In 1860 he was elected Governor of Pennsylvania, serving until 1866, and during the time secured a reputation as an efficient war Governor. He was minister to Russia in 1869-72 and subsequently served three consecutive terms as a Democrat in Congress, beginning in 1881.

CURTIS (kûr'tĭs), **Benjamin Robbins,** jurist, born in Watertown, Mass., Nov. 4, 1809; died Sept. 15, 1874. He graduated at Harvard University in 1829, was admitted to the bar, and established a successful law practice in Boston. In 1851 he was appointed an associate judge of the United States Supreme Court, but resigned in 1857, after presenting a dissenting opinion in the Dred Scott decision. He was one of the lawyers who defended President Johnson in the impeachment trial before the Senate in 1868. He published a large number of law reports, including "Digest of the Opinions of the Supreme Court of the United States in 1854" and "Decisions of the Supreme Court of the United States."

CURTIS, Charles, public man, born near Topeka, Kansas, Jan. 25, 1860. He attended public schools and in 1881 was admitted to the bar. For some years he practiced law successfully, served as county attorney, and was elected to Congress as a Republican in 1892. In 1907 he was elected to the United States Senate and served almost consecutively for twenty years. In 1928 he was elected Vice-President on the ticket with Herbert Clark Hoover.

CURTIS, George Ticknor, lawyer and author, born in Watertown, Mass., Nov. 12, 1812; died in New York City, March 28, 1894. He was a counsel in the trial of Dred Scott. He published many historical and law books, among them "Life of Daniel Webster," "Constitutional History of the United States," "Law of Copyright," "Equity Precedents," "English and American Admiralty Decisions," "Origin, Formation, and Adoption of the Constitution," and "Life of James Buchanan."

CURTIS, George William, author, born in Providence, R. I., Feb. 24, 1824; died Aug. 31, 1892. In 1846 he made a tour of Europe and spent four years in travel and study, visiting Syria, Egypt, and many other countries of antiquity. He became editor of the New York *Tribune* after his return, and was associate editor of *Putnam's Monthly* for five years, beginning in 1852, in which enterprise he lost all his earnings, besides those accumulated for the next sixteen years to wipe out the debt. In 1853 he engaged as writer for *Harper's Monthly,* and after ten years became political editor of *Harper's Weekly.* In the latter he published a series of papers called *The Editor's Easy Chair.* Entering politics, he became a polished and accomplished speaker and took part in many of the national political conventions. He was a Republican presidential elector in 1868 and served as chairman of the civil service commission in 1871-73. Being a strong advocate of civil service reform, he left the Republican party and led the Mugwump movement He became regent of the University of New York in 1864 and in 1890 was made its chancellor. Among his published works are "Prue and I," "Nile Notes of a Howadji," "Lotus Eating," and "Howadji in Syria."

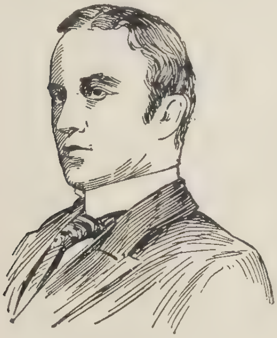
CURTIS, William Eleroy, journalist, born in Akron, Ohio, Nov. 5, 1850. In 1871 he graduated at Western Reserve University and the following year accepted a position on the staff of the Chicago *Inter Ocean.* His "Yankees of the East" is a popular work describing the manners and customs of the Japanese, and in his "United States and Foreign Powers" is given an able summary of the relations of the United States with other nations. Other publications include "The Capitals of South America," "The Life of Zachariah Chandler," "The True Thomas Jefferson," "The Land of the Nihilist," and "Between the Andes and the Ocean." He died Oct. 5, 1911.

CURWOOD, James Oliver, author, born in Owosso, Mich., June 12, 1878; died there Aug. 13, 1927. He graduated at the University of Michigan and took up newspaper work, but soon resigned to engage wholly in writing. His sojourn for several months each year in Canada gave him extended knowledge of that country. His books include "The Gold Hunters," "Nomads of the North," "The Flaming Forest," "The River's End," and "The Black Hunter."

CURTIUS (ko͝or'tsē-o͞os), **Ernst,** historian, born in Lübeck, Germany, Sept. 2, 1814; died in Berlin, July 11, 1896. He was educated at Bonn, Göttingen, and Berlin, visited Athens in 1836, and traveled in Greece until 1840. He taught in Berlin, became professor at the university, and served for seven years as tutor to the Crown Prince of Prussia. In 1856 he was chosen professor at Göttingen, but was recalled to Berlin in 1868. His profound learning and close devotion to educational affairs caused his election to a number of societies, including the Royal Academy of Science. In 1875 he secured to Germany the exclusive right to excavate ruins at Olympia for the study of ancient history. Among his many publications are "Greek Sculpture by Springs and Streams," "History of Greece," "The Atlas of Athens," "Classical Studies," "Ancient and Present Times," and "The Peloponnesus."

CURVE, in geometry, a line which continually changes its direction, or a line no part of which is straight. The circumference of a circle is the simplest of all curves. It is defined as a curve, each point of which is equally distant from the center, or one in which each part of the line is equally curved. The measure of curvature is based upon the circle. The circle which would exactly fit any curve at any point is called the circle of curvature at that point, and its radius is designated the radius of curvature. Curves, in modern geometry, are classified according to the degree of equation by which they are represented. Thus, a straight line is represented by an equation of the first degree and a curve by one of a higher degree.

CURZON (kûr'zŭn), **George Nathaniel,** statesman, born in Derbyshire, England, Jan. 11, 1859; died Mar. 20, 1925. He studied at Oxford, traveled extensively in Persia, Siam, Central Asia, and Corea, and received the gold medal of the Royal Geographical Society in 1895. In 1885 he was employed as private secretary to the Marquis of Salisbury and represented Lancashire as a Conservative member of Parliament from 1886 to 1888. He was Under-Secretary of State for India in 1891-92 and for Foreign Affairs in 1895-98, and became Viceroy of India in 1898, being raised to the peerage at the same time. Curzon displayed a progressive disposition and pursued a vigorous policy toward the British interests in the East. Among his published works are "Problems of the Far East," "Russia in Central Asia," and "Persia and the Persian Question." In 1895 he married Mary Victoria Leiter, who died in 1906, and in 1916 he married Mrs. Grace Duggan. He died Mar. 20, 1925.



LORD CURZON.

CUSCUS, an animal of the phalanger family, native to New Guinea, the northern part of Australia, and the Solomon Islands. It is stoutly built, has a prehensile tail, and is covered with a woolly fur. Several species have been described, including the gray cuscus and the spotted cuscus. These animals are marsupials and are hunted for their flesh and fur by the natives. The spotted cuscus is about three feet long and has a yellowish-white color marked with spots of dark brown.

CUSH (kŭsh), a person mentioned in the Old Testament as the eldest son of Ham (Gen. x., 6, 7, 8). He is regarded the ancestor of the Cushites, who inhabited the land of Cush, which is supposed to refer to Ethiopia, hence Cush is thought to be the ancestor of the negroes. However, some writers think that the Cushites resemble the Egyptians, but it is reasonably certain that the Ethiopian race once extended across the Mediterranean into Babylonia.

CUSHING (ko͝osh'ĭng), **Caleb,** statesman, born in Salisbury, Mass., Jan. 17, 1800; died Jan. 2, 1879. He graduated at Harvard in 1817, was tutor of mathematics and natural philosophy here until 1819, and, after being admitted to the bar, he began practice in Newburyport. He was elected to the Legislature in 1825, traveled in Europe in 1829-31, and returned to Massachusetts, where he served in the Legislature. In 1843 he was appointed United States commissioner to China, in which position he negotiated a treaty of commercial value to the United States. He returned to Massachusetts and was elected to the Legislature in 1846, in which he ardently advocated the war with Mexico. In 1845 he joined Gen. Zachary Taylor as colonel, served through the Mexican War, and was promoted brigadier general. He was elected to the Legislature of Massachusetts in 1850. Two years later he was appointed associate judge of the supreme court of Massachusetts and was made United States Attorney-General in 1853. He was president of the national Democratic convention in 1860 and supported the faction that nominated John C. Breckenridge for President. During the Civil War he favored the Union. In 1866 he aided in revising and codifying the laws of the United States and two years later went to Colombia on a diplomatic errand. He served as minister to Spain in 1873 and attained success in settling the difficulties arising from the insurrection in Cuba. Among his numerous published works are "Reminiscences of Spain," "Practical Principles of Political Economy," "Life of William H. Harrison," "Growth and Territorial Progress of the United States," and "Historical and Political Review of the Late Revolution in France."

CUSHING, Thomas, statesman, born in Boston, Mass., Mar. 24, 1725; died Feb. 28, 1788. He graduated at Harvard College, was elected to the Massachusetts Assembly, and became a member of the First Continental Congress in 1774. During the discussion preceding the Revolution he was active as a supporter of the American cause and was reëlected to the Second Continental Congress in 1775, but the following year was defeated because he opposed the Declaration of Independence. He was active in the public affairs of Massachusetts throughout the Revolution, serving as judge and lieutenant governor, and in 1788 took part in the convention that ratified the Constitution.

CUSHING, William Barker, naval officer, born at Delafield, Wis., Nov. 4, 1843; died Dec. 17, 1874. He was appointed to the academy at Annapolis in 1857, but resigned in 1861 to enter the naval service at the beginning of the Civil War. In the same year he distinguished himself in taking the first prize secured by the Federal navy, a tobacco schooner. His most notable service was rendered at Plymouth, N. C., where he captured the *Albemarle,* a Confederate ironclad ram, on Oct. 27, 1864. Congress thanked him officially for this service and made him lieutenant commander. In 1872 he was raised to the rank of a commander, after serving in the Pacific and Asiatic squadrons.

CUSHMAN (ko͝osh'mạn), **Charlotte Saunders,** actress, born at Boston, Mass., July 23, 1816; died Feb. 18, 1876. Her excellent contralto voice secured a position for her in the church choir at Boston when only twelve years old. Owing to her father's financial failure, her education was secured by the aid of friends. She appeared first in "The Marriage of Figaro" in 1834, but soon after lost her contralto voice. After taking dramatic training, she entered upon the stage in the rôle of *Lady Macbeth*. She appeared on the stage in various plays in New York, Philadelphia, and other large cities of America and Europe. As a Shakespearean reader she took high rank.

CUSHMAN, Pauline, actress and spy, born at New Orleans, June 10, 1833; died Dec. 2, 1893. She was the daughter of a Spanish refugee, became a variety actress in southern cities, and in 1863 was employed as a government spy by the United States to locate southern sympathizers, in which capacity her service was helpful to the Union. Later she was captured by the Confederates, court-martialed, and condemned to be hanged. She was left behind at the evacuation of Shelbyville and rescued by Union soldiers.

CUSTER (kŭs'tẽr), **George Armstrong,** soldier, born at New Rumley, Ohio, Dec. 15, 1839; slain June 25, 1876. He graduated at West Point in 1861 and entered service at once, taking part in the Battle of Bull Run. Later he was appointed captain and aid to Gen. McClellan. In 1863 he became aid to Gen. Pleasanton and was promoted brigadier general. He rendered important service with Gen. Grant in the Wilderness and with Sheridan in the Shenandoah valley, and, after the evacuation of Richmond, he commanded a cavalry division in pursuit of Gen. Lee. After the war he was assigned to the seventh cavalry as lieutenant colonel with the brevet of major. In 1866 he served with Gen. Hancock in an expedition against the Cheyenne and Sioux Indians, and was afterward tried by court-martial for alleged cruelty, after which he was suspended for a year. In 1868 he was restored at the request of Gen. Sheridan.

In 1873 he served in the Yellowstone expedition and the following year explored the Black Hills. Rapid development of the mineral fields of the Black Hills followed his reports of that region and caused troubles with the Sioux Indians, who were then commanded by Sitting Bull. He marched against the Indians in 1876, dividing his expedition into three columns under Generals Gibbon, Crook, and Terry. Custer personally commanded the column under Terry and, upon reaching an encampment of Indians on the Little Big Horn River, divided his men into three bodies. The Indians concentrated their forces upon Custer's division. As he was attempting to ford the stream, they made a fierce charge, in which 3,000 warriors surrounded him and his detachment of 277 troopers, and all were slain. The remains of Gen. Custer were buried at West Point, and a statue was erected to his memory in 1879.

CUSTIS (kŭs'tĭs), **George Washington Parke,** author, born at Mount Airy, Md., April 30, 1781; died in Virginia, Oct. 10, 1857. His grandfather, John P. Custis, was the first husband of Mrs. George Washington. The son was adopted into the family of George Washington, brought up at Mount Vernon, and educated at Saint John's College and at Princeton. He erected Arlington House on an estate of 1,000 acres, near Washington, D. C., which is now the Arlington National Cemetery. His daughter married Gen. Robert E. Lee. He became a noted speaker, produced several paintings of revolutionary battles, and published "Recollections of Washington."

CUSTOMS DUTIES, the taxes levied on imports and exports of commodities. Duties on exports are forbidden by the Constitution of the United States, owing largely to the disadvantage at which the country would be placed by the competition of general commerce, if consumers in foreign countries were required to pay duties to secure American products. The import duties are paid by the importers for the benefit of the government. Customs duties were levied by Greece and Rome. The Venetian government and others supported customhouses during mediaeval ages. The Tariff Union, or *Zollverein,* as it was called, was maintained by the North German States from 1818 until they united and formed the German Empire after the War of 1870-71. The first customhouse was established in London in 1304. Legislation establishing the more modern customs of Great Britain dates from the conflict between the Parliament and the crown in relation to the right of taxation. The term *custom* was derived from the claim made by the crown that it had acquired rights in certain import and export duties by the right of custom. Beginning with 1846, the legislation of Britain has been largely in the interest of free trade, and duties are now levied only on a few articles.

The customs of Canada are collected under the Customs Act of 1915. It provides for three classes of duties known as the British Preferential Tariff, the Intermediate Tax, and the General Tariff. The *British Preferential Tariff* applies to goods as manufactures imported from any British country. On the other hand, the *Intermediate Tariff* applies to imports from any British or other country to which its benefits have been extended, hence is based upon the principle of reciprocity. The *General Tariff* applies to all goods that may not be admitted under either of the other two classes. A *surtax* is levied on imports from the countries which treat imports from Canada less favorably than those from other countries. The customs collected in 1925 amounted to $108,146,871, which is about the annual average.

Alexander Hamilton, who became the first Secretary of the Treasury of the United States, adopted the English system of customs with scarcely any modifications. In 1799 the earliest customhouse was established in New York City.

The net revenues at first were barely sufficient to pay the officers and clerks employed in its management. At present there are about 160 customhouses in the United States. The ten most important are located at New York, Boston, Philadelphia, San Francisco, Chicago, Baltimore, New Orleans, Saint Louis, Detroit, and Tampa. The receipts at New York aggregate about as much annually as those of all others combined. In 1925 the total net receipts were $548,521,795. The fiscal year begins on July 1, according to an act of Congress in 1842, hence the decade from 1841 to 1850 embraces only nine and a half years. Following are the total receipts by decades of the government through the customhouses since the organization of the system:

From 1791 to 1800	$ 50,321,485.87
“ 1801 to 1810	129,540,517.63
“ 1811 to 1820	163,804,167.09
“ 1821 to 1830	198,523,207.69
“ 1831 to 1840	204,703,913.92
“ 1841 to 1850	243,666,681.78
“ 1851 to 1860	544,980,470.30
“ 1861 to 1870	1,239,458,442.34
“ 1871 to 1880	1,663.973,043.74
“ 1881 to 1890	1,992,600,748.76
“ 1891 to 1900	2,195,396,503.80
“ 1901 to 1905	1,300,844,840.00
“ 1905 to 1910	1,876,884,492.75
“ 1910 to 1920	2,573,323,965.02
“ 1920 to 1925	2,321,095.944.81

CUTHBERT (kŭth′bẽrt), **Saint,** an English saint of the Middle Ages, born about 635; died March 20, 687. He is recognized as one of the three saints of the English. His early life was that of the shepherd boy. Later he became a monk in the monastery of Melrose and still later superintendent of guests at the monastery of Ripon. His desire for a more austere life even than the monastic caused him to build a hut on Farne Island, in which he became a solitary recluse. A number of eminent men, among them the King of Northumbria, visited him and induced him to accept the bishopric of Hexham. His life was one of much activity and the influence he exercised was effective during his lifetime and still greater after his death. A number of churches were dedicated to him in various parts of Great Britain.

CUTLER, Manasseh, clergyman and botanist, born at Killingly, Conn., May 3, 1742; died at Hamilton, Mass., July 28, 1823. He graduated from Yale in 1765 and was admitted to the bar of Massachusetts two years later. Not finding the practice of law congenial, he secured a degree in theology and began to preach in 1770. He officiated as pastor of the Congregational church at Hamilton until his death. In the Revolutionary War he served as brigadier chaplain and afterward practiced medicine at Hamilton. His studies included botany, in which he described 350 native species of plants found in New England. He became a member of the Ohio Company, an organization founded to secure the location of bounty lands in a body, and which obtained a government grant of 1,500,000 acres of land northwest of the Ohio River. He served in the Legislature of Massachusetts and was a Federalist member of Congress from 1801 until 1805.

CUTLERY (kŭt′lẽr-ȳ), the general name of sharp-cutting and many-pointed instruments, made chiefly of iron, steel, and cast steel. The first cutting instruments that may be classed as cutlery were made of flint and shells, and these were superseded by those in which bronze was used for the cutting blade. At present steel is employed almost exclusively, though the quality differs materially. The best grade of cast steel is used in making the better class of razors, scissors, penknives, and lancets. Knives and forks employed for table use are manufactured largely of shear steel. Cutlery of all kinds is made chiefly by a forging process, either hand or machine forging, the former being employed for small pieces and the latter for the larger articles. After forging, the piece is made true by filing, after which it is tempered, ground, and polished. Heavy cutting instruments, such as axes, are usually made of two kinds of steel, the cutting edge of the finest quality and the thick part of a soft, cheap, grade of steel.

CUTTER (kŭt′tẽr), a small vessel with one mast and fitted with fore and aft sails. Most cutters are built with special reference to speed. They differ from the sloop in having no stay to support the jib and are used by yachtsmen and for revenue cruisers. Large vessels usually carry four or more boats, known as cutters, as a part of the equipment. This class is fitted either for rowing or sailing.

CUTTLEFISH (kŭt′t'l-fĭsh), a genus of fish which includes the squid, octopus, nautilus, sepia, and other species of marine animals. They bear the scientific name *Cephalopoda.* The body of the cuttlefish is oblong and depressed, sacklike in form, and provided with two narrow lateral fins extending to the anterior part of the body. It has ten arms, each containing four rows of suckers. An internal shell is lodged in a sack, which is somewhat oval, light, and porous. The eyes are very large, and the long tentacles, furnished with suckers on one side at the extremity, serve as food catchers. When not in use, they are carried in pockets beneath the eyes, and may be thrown out with considerable force and skill in seizing the prey. The skin is whitish in color, dotted with spots of red, and the length of the fish is from eight inches to three feet.

The cuttlefish is provided with a bag containing a deep brown fluid that is thrown out to darken the water in cases of danger. By means of it the animal is able to make an easy escape. On account of this and its great activity, much difficulty is found in catching the animal. In early times this fluid was used in making India ink, but it has been superseded by the product made from lampblack and other substances. From the blade-shaped cuttlebone are made tooth powder, pounce, molds for small silver castings, polishing powder, and other useful products. It yields medicine useful for stomach and other complaints.

Cuttlefish are found in almost every portion of the sea. They habitate the bottom of the ocean and coast indentations, confining themselves along the shore and in moderately deep water. Their movements are largely by means of two fins through which streams of water are squirted in such a manner as to assist in propulsion. When in search of food, they watch the prey in a motionless position, but when within easy reach dart their tentacles forward with great rapidity and secure the victims. By a process of withdrawing air from the limbs, they are fastened with a viselike rigor to the victim and escape is rendered impossible. Fishermen have found cuttlefish harmful in devouring fish when caught in their nets. Some of the ancients regarded the flesh of the cuttlefish valuable for food. See **Octopus.**

CUVIER (kü-vyȧ'), **Georges, Baron,** naturalist, born at Montbéliard, France, Aug. 21, 1769; died May 13, 1832. He was the son of a German officer, the place of his birth belonging to Württemberg at that time. He was educated in his native town and entered the Karls Academy at Stuttgart, an institution in which Schiller and other men of eminence were educated. His nomination for the institute was made by Prince Charles of Württemberg. He became a lecturer on natural history and distinguished himself by profound learning, elegance of delivery, and elevated speculation. His investigation of the forests, plants, and fishes led to many new and valuable discoveries. Subsequently he went to Paris, where his lectures were attended by the most accomplished society men and students of advanced branches of learning. He was appointed to the College de France in January, 1800, succeeding Daubenton, and two years later was made perpetual secretary of the Institute. He rose to the height of confidence of the Emperor of France, was admitted to the council of state, and continued to occupy a high place, notwithstanding the fall of Napoleon. In 1818 he was admitted to the French Academy, was made grand officer of the Legion of Honor in 1826, and held many other positions of honor. His lectures and scientific publications include numerous volumes. They include "The Animal Kingdom," "Discourse on the Revolutions of the Surface of the Globe," and "The Natural History of Fishes."

CUYLER (kī'lẽr), **Theodore Ledyard,** clergyman, born in Aurora, N. Y., Jan. 10, 1822; died Feb. 26, 1909. He graduated at Princeton University and Princeton Theological Seminary, and in 1848 was ordained to the ministry. In 1853 he became pastor of the Dutch Reformed Church on Market Street, New York City, and was pastor of the Presbyterian Church in Brooklyn in 1860-90. In the latter year he resigned to become a minister at large and was presented with a purse of $30,000. He was an active worker in the line of temperance and philanthropy. His publications include "God's Light on Dark Clouds," "From the Nile to Norway," "Christianity in the Home," "Help and Good Cheer," "Our Christmas Tides," and "Recollections of a Long Life, an Autobiography."

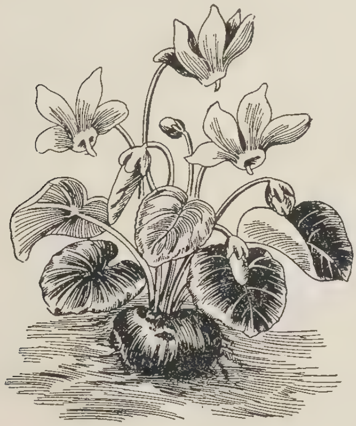
CUYP (koip), the name of a celebrated Dutch family of painters, including two generations, of whom Albert Cuyp is the most celebrated. He was born at Dort, Holland, in 1605; died in 1691. His works most highly praised include paintings of battle scenes, horse markets, wintry landscapes, and grazing and reposing cattle. Several of his productions have sold at high prices; one of natural scenery was sold in 1844 for $5,300. His father, Jacob Cuyp, was a celebrated painter of portraits, and his nephew, Benjamin Cuyp, ranked high in skill for painting seashore and Bible scenes.

CUZCO (ko͞os'kō), a city of Peru, capital of a department of the same name. It is located in a broad valley between the headwaters of the Urubamba and Apurimac rivers, about 11,250 feet above sea level. Railroad connections with the coast and Lake Titicaca make it an important seat of commerce and local industry. The manufactures include cotton and woolen goods, soap, sugar, leather, clothing, machinery, and furniture. It is the seat of a cathedral and a university. Many of the streets are paved with stone and macadam. The public utilities include a public park, electric lighting, waterworks, and a public library. Among the ancient Peruvian cities it held high rank. The Incas emperors occupied it as their capital for many years and beautified it by fortresses and massive architecture, specimens of which still remain. Pizarro conquered it in 1534. Population, 1922, 31,226.

CYAMETER, an instrument for measuring the intensity of the tint of the atmosphere. It was invented by Saussure and consists of a disk divided into sections, each of which is tinted, ranging from white to a deep blue. It is held by the observer in such a position that the color of the sky may be compared with the tints of the instrument, and as the disk is turned it is possible to find a color that corresponds with the blueness of the sky.

CYBELE (sĭb'ē-lē), or **Rhea,** a goddess worshiped by the ancient Greeks and Romans. She was the wife of Cronus and mother of Zeus, Poseidon, and Hades, these three constituting the ruling race of gods. In art she was represented seated on a throne, crowned with flowers, and at her side was a lion. Some artists painted her in a chariot drawn by lions. Her worship spread from Crete to Asia Minor, and was introduced in Rome about 204 B. C.

CYCLADES (sĭk'lȧ-dēz), the southern group of islands in the Aegean Sea, belonging to Greece, so named because they encircle the sacred isle of Delos. They are mountainous and of volcanic origin, but contain fertile soil. Among the largest islands are Myconus, Andros, Tenos, Paros, Melos, and Naxos. The productions include silk, wine, cereals, live stock, olive oil, and fruits.



CYCLAMEN.

CYCLAMEN (sĭk'lȧ-mĕn), a class of plants belonging to the primrose family, native to many parts of Europe and Asia. Two species are cultivated for their flowers in greenhouses. The hardier variety is native to the southern part of Europe and is admired for its flowers, which are either white or rose-colored. The flower has the appearance of being turned inside out, owing to the petals being strongly reflexed.

CYCLE (sī'k'l), a period of years or time in which particular phenomena or a succession of events take place, beginning again at the end of the cycle to pass through the same course. The cycle of the sun covers a period of twenty-eight years; that is, the days of the month return to the same days of the week. In the calendar the return to their former place is marked by the dominical or Sunday letters. The cycle of the moon includes a period of nineteen years, after the lapse of which time a new and full moon occurs on the same days of the month. From its discoverer, Meton, the latter is sometimes called the Metonic Cycle and the Golden Number.

CYCLING (sī'klĭng), an art developed by the perfection and general use of bicycles. In many centers of population associations are maintained for the purpose of developing the art. It is their aim to promote interest with the view of establishing bicycle riding as a game and for the development of grace and skill in its use. Among the most celebrated organizations founded are the League of American Wheelmen and the National Cycling Association. The best records made by professional riders as to time include the following: One-half mile, 40 seconds; one mile, 57; two miles, 2:30; three miles, 3:52; four miles, 5:21; and five miles, 6:45. When the bicycle first came into use, wheeling was a fad, but now it is employed more specially for business purposes and scientific sports.

CYCLOMETER (sī-klŏm'ḗ-tẽr), an instrument used to record the revolutions of certain parts of machinery, such as the wheel of a carriage or bicycle. It is commonly attached near the wheel of an automobile, in such a position that a cam on the spoke will act upon a projecting part at every revolution, causing the clockwork within the cyclometer to move. The circumference of the wheel being known, it is possible to estimate the distance traveled by computing the revolutions recorded in the instrument. In most forms the mechanism is so arranged that the register will show every five, ten, and one hundred miles, as the case may be, when the instrument will begin anew in registering in these denominations.

CYCLONE (sī'klōn), the name applied to storms that have a circular or rotary movement. The diameter varies from a small extent to 500 miles, the rotary motion being rapidly round a center and the advance movement often reaching forty miles an hour. Cyclones are caused by the rays of the sun falling within the tropics and heating the air so it rapidly ascends, thereby causing colder currents to rush beneath and take its place. The revolving motion is produced partly by the rotation of the earth, but more directly by the rapid inflow of the lower currents of air as the lighter currents ascend. No cyclones are experienced directly under the Equator. Those south of the Equator revolve in a direction the same as that of the hands of a watch, while those north of the Equator revolve in a diametrically opposite direction. Cyclones are most common to the western portions of the United States, the West Indies, the China Seas, and the seas surrounding the Mauritius Islands. The cyclones frequenting the West Indies originate mostly in the Caribbean Sea. This class of storms is extremely destructive, often tearing down forests, destroying cities, and causing great loss of life and property. Skillful navigators are able to escape them by sailing out of their course, or, if struck, they avoid serious damage by a careful and proper adjustment of the sails. The approach of cyclones is marked by a rapid fall of the barometer and is preceded by a singular calm. They are attended frequently by intense electrical disturbances.

CYCLOPEAN (sī-klṓ-pē'ạn), the name applied to a primitive style of architecture, which is fabled to be the work of the Cyclops. It consists of huge blocks of stone, unhewn and uncemented, and the corners are fitted accurately into one another. Other structures of this kind consist of regular blocks of equal height. Specimens are found in Asia Minor, Sicily, at Mycenae, in Greece, and other regions of the ancient peoples.

CYCLOPS (sī'klŏps), in Greek mythology, a race of giants, sons of Uranus and Ge, meaning Heaven and Earth, slain by Apollo. They worked with Vulcan at his forge in the heart of burning mountains, especially in Mount Aetna.

They are sometimes represented as a race. In the "Odyssey" they are described as a race having only one eye, in the center of the forehead. It is said that they had enormous strength and were fearless of gods and men. Some writers consider them similar to the Volcanic Cyclops in having great strength and one large round eye, but different in that they are connected with Neptune and the forces of the sea. The Cyclops appear to have lived in Sicily and reared large herds of sheep, goats, and cattle. Polyphemus, one of their number, was a son of the sea god. The most distinguished that labored with Vulcan were Brontes, Steropes, and Arges.

CYDNUS (sĭd'nŭs), a river of Asia Minor, in Cilicia, rises in the Taurus Mountains and flows into the Mediterranean Sea. Anciently it was navigable to Tarsus, about twelve miles, but its mouth is now obstructed by bars of sand. The Cydnus is celebrated as the meeting place of the fleets under Antony and Cleopatra in 41 B. C.

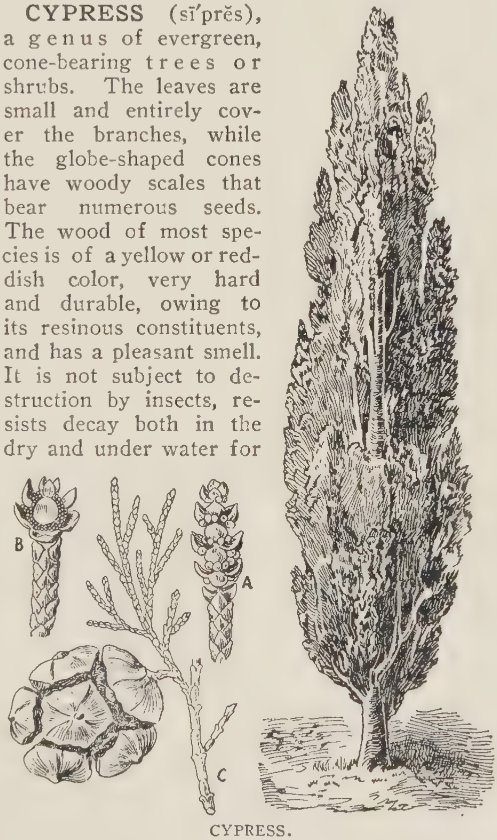
CYLINDER (sĭl'ĭn-dẽr), a solid geometric form consisting of a long, round body, having two flat, circular surfaces which are equal and parallel. Any cylindrical portion of a machine is called a cylinder, especially if hollow and proportioned so the length somewhat exceeds the diameter, as the cylinder of a printing machine, the chamber in which the force of steam, or other power, is exerted on the piston, the barrel of a gun, etc. The axis of a cylinder is the straight line about which it revolves; the bases are the two opposite ends.

CYMBALS (sĭm'bạls), the name of plates of bronze, more or less basin-shaped, to which leather straps are fastened for holding by the hands in producing sounds in accord with music. They were used in very ancient times and are represented upon many monuments. In 1043 B. C. they were mentioned among other instruments in connection with the return of the ark of David. The Grecians used them in worshiping the goddess Cybele. Cymbals now made consist of twenty parts of tin and eighty of copper. The best are imported from China and Turkey. They are used mostly in military music and on the bass drum played in orchestras. One cymbal is fixed to the drum and the other is held in one hand by the player, while the drumsticks are held in the other hand. The best effect is secured by being struck together with a single sliding motion.

CYMRI (kĭm'rĭ), or **Kymry,** a branch of the Celts of Britain. They succeeded the Gauls and drove them west into Ireland, into the Isle of Man, and toward the north into the Highlands of Scotland, while they themselves located in and occupied the southern portion of Britain. Later they were driven out of the Lowlands of Britain into the mountain regions of northwestern England, and into the mountains of Wales by the invasion of the Saxons, Angles, and Jutes. Descendants of the Cymri are found chiefly in Wales at present.

CYNICS (sĭn'iks), the name of a school of Greek philosophers, founded in the fourth century B. C. by Antisthenes, a pupil of Socrates. The seat of this school was in the gymnasium Cynosarges in Athens, and the most renowned disciples included Diogenes, Crates of Thebes, his wife Hipparchia, and Menippus. They taught that all speculative philosophy is detrimental to the real knowledge of truth, that it leads to sophistry and the destruction of human society, and that the true object of philosophy is to show how men might best live morally and peaceably. In this they harmonize with the Stoics, but differed from them in defining virtue to be the highest possible simplicity in living. Their devotion to the simple life was so great that they came to despise labor, decency, cleanliness, and the essential requirements of society. This caused them to become in disrepute. The name *Cynic* is still applied to one who disregards the proprieties of life, doubts the wisdom of protecting personal character or motives, or displays singularity in treating the social usages.

CYPRESS (sī'prĕs), a genus of evergreen, cone-bearing trees or shrubs. The leaves are small and entirely cover the branches, while the globe-shaped cones have woody scales that bear numerous seeds. The wood of most species is of a yellow or reddish color, very hard and durable, owing to its resinous constituents, and has a pleasant smell. It is not subject to destruction by insects, resists decay both in the dry and under water for many years, and is a favorite wood for cabinet work, owing to its beautiful color and property



CYPRESS.

A, male flower; *B,* female flower; *C,* fruit.

of being easily polished. It grows profusely in swamps and often attains a thickness of from ten to twelve feet at the ground. Some species have large spreading tops, while others assume a slender, cone-shaped form. In the United States there are large forests, especially in the south and on the Pacific slope, and some species are common to the far north of Canada and Alaska.

The name was derived from Kypros, the Greek name of the island of Cyprus, where the tree is found in great abundance. It is native to Persia, the Levant, and countries adjacent to the Mediterranean Sea. The Mohammedans planted it largely in burial grounds, which have taken on the form of immense forests. The Romans and Greeks cultivated it in their parks and gardens for ornamental and sanitary purposes. Cypress wood was used largely for coffins by the Greeks and for mummy chests by the Egyptians. The doors of Saint Peter's at Rome were originally made of it. Though subsequently replaced by brazen doors, they answered the purpose for more than a thousand years. The cypress gates of Constantinople served their purpose for an equal length of time. Cypress wood is used largely at present for building purposes in Europe as well as in other portions of the old world.

CYNTHIANA (sĭn-thĭ-ă'nȧ), a city of Kentucky, county seat of Harrison County, thirty-three miles northeast of Lexington, on the Louisville and Nashville Railroad. It is finely located on the south fork of the Licking River, and is surrounded by a fertile farming region. The manufactures include machinery, cigars, and spirituous liquors. It has electric lights and other municipal facilities, several county buildings, and a number of churches and schools. In 1864 it was the scene of a battle between the Confederates under John Morgan and the Federals under General Burbridge, in which the former were defeated. Population, 1920, 3,857.

CYPRIANUS, or **Cyprian, Thascius Caecilius,** bishop and martyr, born at Carthage, Africa, near the beginning of the third century; died Sept. 14, 258. He was a teacher of rhetoric and was converted to Christianity about 246, and two years later became Bishop of Carthage. Emperor Decius promulgated an imperial decree in 249 by which Christianity was made a forbidden religion, and Cyprianus withdrew to an unknown region in the desert to escape persecution, but returned to Carthage in 251. He assembled a council to determine what should be done with the deserters of the Christian faith, whom he wished treated with leniency and moderation. He wrote a number of treatises and many epistles on ecclesiastical affairs. In 258 he suffered martyrdom under Valerian.

CYPRUS (sī'prŭs), an island in the eastern part of the Mediterranean, south of Asia Minor. It is sixty miles wide and 145 miles long. The area is 3.584 square miles. Two mountain ranges traverse its surface, one along the northeastern coast and the other in the southern part. Both ranges trend east and west. The southern chain is the most prominent, its highest point, Mount Troödos, having an altitude of 6,585 feet above sea level. Numerous bays and inlets indent the coast and furnish safe harbors. A number of small lakes occur in the eastern and southern parts. The Pedioes Potamos is the chief stream. Large areas of the surface are exceedingly fertile and productive. All parts of the island have a pleasant and healthful climate. The mountains are covered with forests of excellent timber and underlaid by rich mineral deposits. The chief minerals include copper and salt, which were produced in large quantities anciently, but are not worked extensively at present. Among the products are cotton, wheat, barley, tobacco, olives, raisins, carobs, and various vegetables. Silk culture is an important industry. The extensive pasture lands facilitate the rearing of large herds of sheep, goats, and cattle. The chief exports consist of raisins, cotton, wool, carobs, cheese, cocoons, and salt. The imports are exceeded greatly by the exports, thus adding annually to the wealth of the island.

The island is divided into the six districts of Kyrenia, Larnaca, Nicosia, Papho, Limasol, and Famagusta. The government is administered by a resident high commissioner with an executive council, and a legislative council of eighteen, of whom twelve are elected by popular vote. Nicosia, population 14,752, is the seat of local government. Other towns include Larnaka, Limasol, and Famagusta. Under British rule a system of schools has been established, supported by public grants. A number of railway lines have been built, including one inland from Famagusta, where a harbor has been improved. A majority of the inhabitants are Greek Catholics and the remainder are mostly Moslems. Population, 1916, 238,312.

Cyprus was colonized by the Phoenicians and later fell successively into the hands of the Greeks, Egyptians, Persians, and Macedonians. It became a Roman province in 57 B. C., and was connected with the eastern division of the empire. The Cypriotes were visited by Saint Paul and were among the first gentile people to embrace Christianity. They were conquered by the Saracens after the decline of Rome began. Richard I. of England conquered them in the third Crusade to Jerusalem and restored the island in 1191 to Guy de Lusignan, but, after his line became extinct, it fell into the hands of the Venetians, in 1489. The Turks conquered it in 1571 and added it to the Ottoman Empire, but it was ceded to Great Britain in 1878 by the convention of Constantinople, with the provision that it should revert to Turkey when Batoum and Kars are restored by Russia. The island is rich in relics of ancient peoples. Among the remains discovered is the oldest copy of the Gospels and other early Christian writings of much value. Many of the remains may be seen in the museums of London, Berlin, and New York City.

CYRENAICS (sĭr-ē-nā'ĭks), a school of Greek philosophers, founded in 380 B. C. by Aristippus of Cyrenaica, a pupil of Socrates. It taught that pleasure is the highest object in life, that virtue consists in the art of producing the highest possible amount of agreeable feeling, and that all should live in moderate activity, but pains should be shunned. This school agreed with the Cynics in despising all speculative philosophy, but maintained a higher plane of morality and limited their practice to the amiable and moderate enjoyments of life. It was succeeded a century later by the philosophy of Epicurus, known as Epicureanism. The chief philosophers of the Cyrenaic school included Aristippus, the founder, his daughter Arete, his grandson Aristippus Metrodidactus, and Hegesias.

CYRENE (sī-rē'nē), an ancient city of Africa, the capital of Cyrenaica, located about ten miles from the Mediterranean. It was situated on an elevated tract of land about 1,800 feet above the sea giving it a fine outlook over the surrounding country. A colony of Dorians founded it in 631 B. C. and made it a center of Greek learning. It had a large commerce with Greece and Egypt for many centuries. Among its famous men are the astronomer Eratosthenes, the poet Callimachus, and the philosophers Carneades and Aristippus. Grenna, a small town of the province of Barca, now occupies the site.

CYRIL (sĭr'ĭl), **Saint,** Bishop of Jerusalem, born near Jerusalem, about 315; died in 386. He was ordained as priest in 345 by Maximus, Bishop of Jerusalem, whom he afterward succeeded. Extended controversies with the Arians caused him to be deposed in 358, but he was restored to office the following year by a synod held at Seleucia. Subsequently he was deposed a number of times, but each time was exonerated and restored. His writings are largely on doctrinal points in theology, including a number of treatises and addresses.

CYRIL, Saint, a patriarch of the Greek Church, born in Alexandria, Egypt, about 376; died in 444. He studied under Theophilus, Bishop of Alexandria, whom he succeeded in 412. Alexandria was at that time one of the four principal seats of ecclesiastical power and its bishops bore the title of patriarchs. A controversy between him and the Jews caused him to expel them from the city in 416. He opposed the Nestorians and presided at the council of Ephesus in 431, which deposed Nestorius. His writings are very numerous and include a work in ten volumes written against the teachings of Julian the Apostate.

CYRUS, The Great, founder of the Persian Empire, according to Herodotus, the son of a Persian noble named Cambyses. For the greater portion of the history of this remarkable man we have to look to the cuneiform inscriptions found on tablets, cylinders, and monuments. It is generally agreed by historians that he was a man of courage, amiable disposition, and given to plotting ambitious schemes from youth. He early surrounded himself by trustworthy followers and put himself at the head of the Persian troops and advanced into Media, where he overthrew the forces of Astyages in 509 B. C. By adding this dominion to his own, he founded the celebrated Medo-Persian Empire, and spent a number of years in solidifying his dominions. Entering upon a career of conquest, he gained Lydia from the famous Croesus in 546, and soon after subjected the whole of Asia Minor. In 538 he captured the city of Babylon, the celebrated metropolis of Babylonia, by which the Jews were liberated from capitivity and allowed to return to Palestine. His policy toward the conquered people was one of liberality, seeking in this way to reconcile the nations he had captured to his dominion. At the time of his death, which occurred in 529 B. C., his dominions extended from the Gulf of Aden to the Black Sea and from the Mediterranean to the Hindu-Kush Mountains. Both the historians Herodotus and Xenophon give an account of this monarch, which leads to the conclusion that he was wise, gallant, and strong in military achievements.

CYRUS, The Younger, King of Persia, lived about 130 years after Cyrus the Great. He was the second son of the Persian king Darius Nothus. His brother, Artaxerxes Mnemon, succeeded to the throne in 405 B. C. To obtain possession of his brother's kingdom Cyrus organized a conspiracy, but was detected and sentenced to death. Later he was pardoned by the intervention of his mother, Parysatis, and restored to the office of satrap of Asia Minor. While filling this position, he organized a second effort to gain the Persian throne. Gathering an army of 100,000 Asiatics and 13,000 Greeks, he met his brother in battle near Cunaxa in the year 401 B. C., who had an army of 900,000 men. The battle was prolonged and terrific, but resulted in the death of Cyrus. The Grecian contingents distinguished themselves by much bravery, and their return home in the face of superior numbers was celebrated as a national event. It is known in history as the *Retreat of the Ten Thousand,* and was made the subject of Xenophon's most popular work, the "Anabasis."

CZAR (zär), the title of the emperor of all the Russias, probably derived from the Roman title *Caesar.* Ivan IV., the Terrible, was crowned the first Czar of Russia in 1547. *Czarina* is a term used to designate the empress; *czarevitch,* the heir apparent; and *czarevna,* the wife of the heir apparent. The Russians commonly called the Czar *Gosudar,* meaning lord.

CZECHO-SLOVAKIA, a republic in eastern Europe, bounded on the north by Germany and Poland, east by Russia and Roumania, south by Hungary and Austria, and west by Germany. It comprises Bohemia, Moravia, Ruthenia, Silesia, Slovakia, and a part of the Teschen coal district; a portion of Teschen belonging to Poland. The area is 54,438 square miles.

Surface and Productions. The country is about 80 miles wide and 600 miles long. It includes a portion of the valley of the Danube. The Bohmerwald is on the western and the Carpathians are on the eastern border, while the Little Carpathians pass through the country and divide it into two almost equal parts. In the western section are the Moravian Highlands. Much of the surface is smooth and fertile.

Sugar beets, potatoes, wheat, rye, barley, oats, flax, maize and fruits are grown abundantly. Animal husbandry is highly developed, especially in the rearing of horses, swine, cattle and poultry. All classes of manufactures are produced, especially sugar, glass, clothing, farm and railway machinery, furniture, and alcoholic drinks. Soft coal is produced in large quantities for consumption and export. The foreign trade averages about $25,500,000 per year and is chiefly with Germany, Austria, Hungary and Italy. Transportation is carried by navigation on the Moldau and the Danube and by a network of steam and electric railways.

Population. In 1923 the country had a population of 13,483,640, including 3,210,500 Germans, 750,000 Magyars, 460,000 Russians and 182,000 Jews. About three-fifths of the inhabitants are Czechs and Slovaks, who speak a similar language but have a different literature. Of the people 10,680,000 are Roman Catholics, 980,000 are Protestants and 595,000 are Greek Catholics. Four universities are maintained, one German at Prague, one Slovak at Pressburg, and two Czech, that is one at Bruen and one at Prague.

Government. The present constitution dates from 1920, when the state was formally organized as a democratic republic. Executive power is vested in a president, who is elected by the two chambers in joint session and serves seven years. The senate of 150 members and the deputies of 300 members constitute the parliament, the former elected for eight and the latter for six years. Prague, on the Moldau, is the capital and chief city. Other cities include Pressburg, Pilsen, Karlsbad, Bruen (Brunn), Kaschau, Reichenberg, and Budweis.

History. Czecho-Slovakia declared its independence and established a republic in 1918, shortly after the armistice was signed ending the Great European War. The principal allied countries soon recognized the new government. Thomas G. Masaryk, an educator of Bohemia, was chosen the president when the republic was declared and, in 1920, he was regularly elected; he was reëlected in 1927. See **BOHEMIA.**

CZERNOWITZ (chĕr′nô-vĭts), the capital of Bukowina formerly a part of Austria, on the Pruth River, about 136 miles southeast of Lemburg. It is the seat of a Greek Catholic cathedral, several synagogues, and a number of noted monuments. The university, founded in 1875, has sixty-two professors and lecturers, an excellent library, and is attended by 850 students. It has a public library of 60,500 volumes. The city is connected by railroads and has modern municipal facilities. Among the manufactures are carriages, clocks, silver plate, toys, cigars, implements, and machinery. It was annexed to Austria in 1777. The Russians captured it in 1915, but they were expelled by an Austro-German army. Population, 1922, 88,772.

CZERNY (chĕr′nē), **George,** known as *Black George,* a Servian leader for independence, born Dec. 21, 1766; slain July 27, 1817. He was the son of Servian peasants, and was forced to flee to Austria on account of having engaged in quarrels with the Turks. Subsequently he joined the Austrian army and fought against the Turks from 1788 to 1791, rising to the rank of sergeant. He returned to Servia and lived on a farm for some years, but, when a band of Janizaries broke into his house in 1801, he again fled for safety, but vowed vengeance. Soon after he organized a band of malcontents and conducted a guerrilla warfare. Owing to dissatisfaction with Turkish rule, his numbers were soon increased and he was able to capture Shabatz. In 1806 he defeated the Turks at the Drina and Morava rivers, and by the secret assistance of Russia captured Belgrade in the fall of the same year. A treaty was made at Slobosic on July 8, 1808, after which he was elected governor by the people and recognized by the Sultan as prince of Servia.

CZERNY, Karl, pianist and composer, born in Vienna, Austria, Feb. 21, 1791; died in 1857. He studied music under his father and began to play in public at an early age. Subsequently he received training under Beethoven, whose celebrated concertos were played by him at the age of fifteen years. He became the most popular teacher of the piano in Vienna, and was the instructor of Liszt and Thalberg. His compositions number about 900. He is the author of several valuable exercises and instruction books for the pianoforte.

CZOLGOSZ (chŏl′gôsh), **Leon,** anarchist and assassin, born at Detroit, Mich., in 1873; executed Oct. 29, 1901. He descended from Polish parents and learned the trade of an ironworker. In 1901 he attended the Pan-American Exposition at Buffalo, N. Y., for the purpose of assassinating William McKinley, President of the United States, whom he shot twice on Sept. 6, 1901.

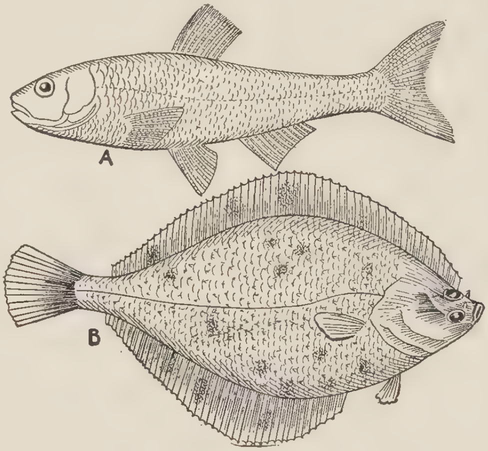
D

D, the third consonant and fourth letter of the alphabet. The name in the Greek is *delta,* which is a modification of the Semitic word *daleth,* meaning a door. It is interchangeable with *t* in some languages, since the two letters are similar in the mode of pronunciation. In English it is always sounded, though often but slightly, as in handkerchief. It represents a dental sound formed by passing vocalized breath into the mouth, after placing the tip of the tongue against the roots of the front teeth. In Roman numerals D represents 500 and is equal to 5,000 when a line is placed over it, as D̄. As a symbol in music D is the second note of the natural scale of C.

DAB, a species of flatfish belonging to the same genus as the plaice and flounder. It is allied to the soles, turbots, and halibuts. The length seldom exceeds twelve inches. The color is brown and yellow and it is characterized by a small mouth and eyes. It is common off the coasts of England and France. A similar fish, the *rusty dab,* is found on the coast of Nova Scotia and New England.

DACCA (dăk′kȧ), a city of Bengal, capital of a district of the same name, on the Burhi Ganga, 150 miles northeast of Calcutta. The streets are narrow and angular and the older portion is not well improved. In the newer parts a number of fine buildings are maintained. Besides numerous schools, there are several colleges and mosques and places of worship belonging to the Greeks and Armenians. Railroad connections have been established with many commercial centers. Its navigation trade is large, especially in textiles and live stock, owing to its favorable location and safe harbor. It has numerous modern facilities, including tramways, electric lights, and telegraph and telephone lines. It became the seat of the Mohammedans in Bengal in 1610, and with a short intermission remained its capital until 1704. Large manufactures of muslins were carried on in the city by the Dutch and French in the 18th century, when it had a population of about 200,000. Owing to civil disturbances and other causes, it declined for some time, but in recent years its prosperity has been revived. Population, 1922, 92,342.

DACE (dās), or **Dare**, a fish common to the streams of Europe and New England. The various species are fine anglers and favorites for table use. They are gregarious and swim in shoals. Their weight seldom exceeds a pound. The dace spawns in April and May. Artificial pearls are made of the scales of several species, especially of the roach. Several species, such as the chubs, are favorite fishes in the streams and lakes of the Rocky Mountains.



A, Horned Dab; *B,* Brown Dace.

DACIA (dā′shă-ȧ), an ancient country of Europe, located between the Danube and the Carpathian Mountains. It was occupied by the Daci, a warlike people, and was annexed to Rome by Emperor Trajan in 101 A. D., after a decisive battle near Torda. The Romans sent colonists into the country, constructed highways, and built a great bridge across the Danube. In 274, in the reign of Aurelian, the Romans relinquished Dacia and it was occupied by the Goths. At present the region is comprised in Moldavia, Transylvania, Wallachia, and the eastern part of Hungary.

DAEDALUS (dĕd′ȧ-lŭs), in Greek fable, an Athenian who personified architecture, sculpture, and mechanism. He was the first to introduce the art of sculpture in its higher development as well as architecture of rare beauty, but great as his genius was also his vanity. His nephew and pupil, Talus, invented both the saw and compass, which caused envy to such an extent that Daedalus slew him, on account of which he fled to Crete for safety. While at Crete he constructed the celebrated labyrinth for King Minus in which he confined the Minotaur, a monster with the head and shoulders of a bull and the body of a man. He was long kept a prisoner, and in order to escape made wings for himself and his young son Icarus. The son was exceedingly delighted with his flight and soared so near the sun that the wax by which his wings were attached melted and he fell into the sea and was drowned. The bereaved father buried his body on an island in the Icarian Sea, named on his account. Later he dedicated his wings to Apollo, and occupied himself on the island of Sicily in the construction of various beautiful works of art.

DAFFODIL (dăf'fô-dĭl), a group of plants of the genus *Narcissus*. Though native to Europe, many species have been widely acclimated and are grown in gardens in America. Most of the cultivated plants bear solitary flowers with a bell-shaped crown longer than the perianth tube. The flowers are mostly yellow and include both single and double forms.

DAGOBERT (dăg'o-bẽrt), the name of several Merovingian kings of France. Dagobert I., born about 600; died Jan. 19, 638, is the most famous of the family. He was elected King of Austrasia in 622. In 628 he succeeded his father as King of Neustria. He added Aquitania to his kingdom in 631, after the death of his brother Charibert. Having been made the ruler of the whole of France, he encouraged interior improvements and greatly restricted the power of the feudal lords and prelates. The most valuable of his public acts was the revision and codification of the Frankish laws, which became known as the Salic and Riparian laws. His two sons, Sigebert and Clovis II., were placed on the thrones of Austrasia and Neustria when mere children. Dagobert II. (652-679), son of Sigebert II., was the last Merovingian King of Austrasia.

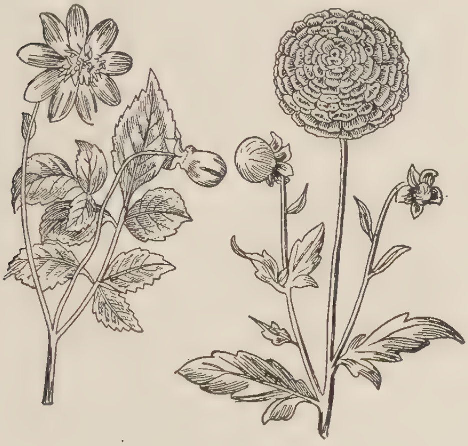
DAGON (dā'gŏn), the god of the Philistines, the personification of reproduction, generally represented as half man and half fish. The Old Testament mentions temples built to his honor at Gaza and Ashdod, which were destroyed by Judas Maccabaeus about the year 148 B. C. The great temple at Gaza was the scene of a magnificent sacrifice offered by the Philistines when Samson was delivered into their hands, and at that time the edifice was destroyed by him. An account of this event is given in Judges xvi., 23-30. Doré made it the subject of a famous painting.

DAGUERRE (dä-gâr'), **Louis Jacques Mandé,** painter and physicist, born at Cormeilles, France, in 1789; died near Paris, July 12, 1851. His first occupation was that of a revenue officer, but later he took lessons as a scene painter for the opera. His attention was called in 1814 by Nicéphore Niepce to the subject of photographic pictures on metals. The two joined in experimenting for fifteen years with an alloyed process, in which a plate coated with asphaltum was exposed in a camera and the image developed by dissolving away the unalloyed portions by oil of lavender. Most of the work done by Daguerre, who perfected the process, which has since been called Daguerreotype, in 1833. The French government granted a pension of $1,200 to Daguerre, one-half of which was to revert to his widow, and a pension of $800 to the son of Niepce. Other processes have superseded the Daguerreotype.

DAHLGREN (dăl'grĕn), **John Adolph,** naval officer and inventor, born in Philadelphia, Pa., Nov. 13, 1809; died at Washington, D. C., July 12, 1870. He was the son of Ulrick Dahlgren, a merchant of Philadelphia, who served as consul to Sweden for many years. The young man entered the navy in 1826, six years later passed midshipman, and afterward served on the coast survey. He was assigned to ordnance duty in Washington in 1845, in which position he turned a part of his time to inventions. The most important is known as the *Dahlgren gun*, which is an improvement in that it contains relatively more metal behind the trunnions, where the greatest strain is in firing. These guns are unsurpassed in the world and are still favorites among American seamen. At the beginning of the Civil War he was placed in command of the navy yards at Washington, and in 1863 took charge of the South Atlantic blockading squadron as rear admiral. He rendered valuable service in assisting General Sherman in his military operations in South Carolina and Georgia. In 1866 he commanded the South Pacific squadron and in 1868 took charge of the bureau of ordnance in Washington. He wrote a number of works on ordnance that have been used as text-books by the government. Among his writings are "Percussion System," "Boat Armament," "Shells and Shell-Guns," and "Maritime International Laws."

DAHLGREN, Madeline Vinton, writer and society woman, born in Gallipolis, Ohio, in 1835; died in Washington, D. C., May 28, 1898. After securing her education, she wrote sketches and poems under the name of *Corinne* and later under the name of *Cornelia*. She married David Convers Goddard at an early age, who died in August, 1865, and later married Admiral Dahlgren. She was prominent as an opponent of the woman suffrage movement, became one of the founders of the Literary Society of Washington, and served as president of the Ladies' Catholic Missionary Society for a number of years. Among her best known writings are "Thoughts on Female Suffrage," "Memoirs of John A. Dahlgren," "Lost Name," "Lights and Shadows of Life," "South Sea Sketches," and "Social Official Etiquette of the United States." She translated a number of works from the French, including Montalembert's "Pius IX." and De Chambrun's "Executive Powers." We are indebted to her for translations from the Spanish, including Cortes's "Catholicism, Liberalism, and Socialism."

DAHLIA (däl'yȧ), a genus of plants native to Mexico, named after the Swedish botanist Dahl. The plant has been greatly improved and its flowers variegated in color by cultivation. Specimens were first brought to Europe in 1784, but it is now known almost world-wide. The flowers are general favorites in gardens and parks, where the dahlia is cultivated as an ornamental plant. Some species have single flowers, but most of them are double, showy, and symmetrical. They are propagated by cuttings, seeds, and the roots, which are dug up in the fall and stored like potatoes in the cellar. The corolla of the dahlia yields a beautiful carmine.



DAHLIAS.

DAHN (dän), **Julius Sophus Felix,** author and jurist, born in Hamburg, Germany, Feb. 9, 1834. At an early age he received a classical training, studied history and law in Munich and Berlin, and was made professor of law at the University of Munich in 1862. Subsequently he taught jurisprudence in Würzburg, Königsberg, and Breslau, in which he established a reputation as teacher and writer. Though most of his writings deal purely with history, he is the author of several widely known historical novels, which treat of the primitive Germanic peoples and trace the more important events from the beginning of historic times to the Crusades, and from the Vikings to the Goths in Italy. A volume entitled "Poems, Ballads, and Songs" is a collection of poetry, and his shorter stories include "Attila," "Felicitas," and "Stilicho." Other works written by him include "Kings of the Germans," "Sense in Jurisprudence," "A Campaign to Capture Rome," and "Primitive History of the Germanic and Roman Peoples." He died Jan. 3, 1912.

DAHOMEY (dä-hō'mȧ), a French colony in Africa, on the northern coast of the Gulf of Guinea, located between Nigeria and the German colony of Togoland. It has been the seat of some contention on account of conflicting claims of France, Germany, and England. The area is about 60,000 square miles and it has a seacoast of seventy miles. It consists of two divisions, a native kingdom under the rule of a local African prince and a colony comprising the settlement of Benin on the coast, with a tract of country extending toward the interior.

The colony is governed by a local governor, who is assisted by a council. Two prominent residents, one of whom is native and one is white, are included with the higher officials. The capital is Abomey, near the port of Whydah, and it and Kotonu are the principal trading points, though considerable commerce is carried on at Grand Popo and at Porto Novo. The natives of Dahomey are Negroes, who are small of stature, but robust, and quite industrious. They engage in fetish worship. Their chief sacrifices are made to trees, snakes, thunder, and the sea. Agriculture, trading, hunting, and rude manufacture are their chief occupations.

The colony has a large area of fertile soil, is well watered by small streams, and is valuable for its coast line on the Gulf of Guinea. Large desert tracts extend throughout the northern part. The wild animals include lion, tiger, boa, hyena, elephant, and many species of reptiles and birds. Among the chief products are tobacco, cotton, indigo, sugar, palm oil, India rubber, millet, vegetables, and many varieties of fruits. The annual exports have steadily increased the past decade. The export of palm oil aggregates about 10,000 tons annually and of palm kernels about 20,000 tons.

Dahomey was organized into a native kingdom at the beginning of the 18th century, but reached its greatest strength under the reign of King Ghezo from 1818 to 1858. It was placed under the protectorate of Portugal in October, 1885, but fell to the French on account of local differences in 1892. A consistent development has been made under French influence. The slave trade has been abolished and the former custom of offering human sacrifices is almost extinguished. Population, 1922, 998,500.

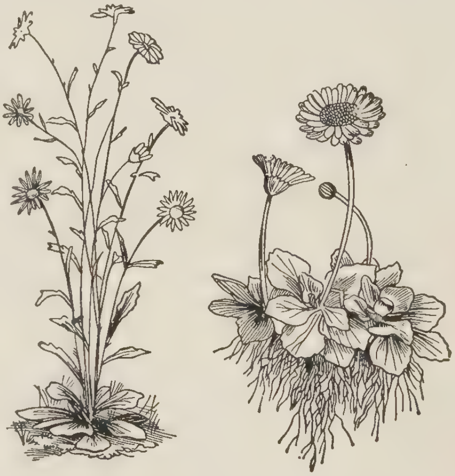
DAIRYING (dā'rȳ-ing), the industry in which milk and butter are produced. This branch of agricultural industry has been greatly extended and radical changes in methods of work have been brought about. The improvements are notable not only in the United States and Canada, but in the dairying districts of Germany, Austria, Denmark, Holland, Belgium, and Sweden, where experimental stations and dairying schools are maintained for the investigation and study of rearing cattle and making butter and cheese. Denmark maintains about a hundred high schools and a dozen agricultural institutes in which pupils learn dairying by practical work, and, as a result, the industry has been placed on a very high basis. About fifty institutions teach dairying and related productive arts in the United States, where the annual output of butter has a value of $315,500,000 and cheese $82,000,000. About 10,000 creameries and cheese factories are operated. The leading dairy schools of Canada are at Guelph and Toronto. Coöperation has been applied more successfully in dairying than in any other branch of industry. Many farmers have introduced coöperation in various places, uniting the milk products of the farms and sharing the results obtained at a central creamery. The effect has been that butter of a much higher quality is now obtained, the price of the product has been raised, and the quantity has been increased notably.

Much attention is given by agriculturists to the improvement of cattle for dairying purposes. As distinct butter producers the Jersey and Guernsey cattle have been found preferable, since their milk contains the best and largest quantity of butter fat and the flavor is of a high quality. The Holstein-Friesian cattle yield the largest quantity of milk, but their product is inferior in solid material, though they possess a high degree of beef-producing qualities. The Ayrshire cattle are midway between the Jersey and Guernsey on the one hand and the Holstein-Friesian on the other in the quality of milk produced, and have been found excellent for cross breeding with other stock on account of their rugged constitution. An average cow produces about 130 pounds of butter per year, while the higher grades of cattle produce from 300 to 350 pounds, but some individuals yield larger quantities.

The apparatus used in dairying has undergone marked improvements. The Babcock milk-tester, a centrifugal machine for separating cream in small tubes, formerly tested to about one-tenth of one per cent., but it has been so improved and modified that it is capable of testing to one-hundredth of one per cent. It is now used largely among dairymen for testing cattle by their milk product. Equally beneficial improvements have been made in machines for mechanical separation. There are now more than a dozen separators on the market, by which butter fat to within one-tenth of one per cent. can be extracted from the milk. Churns and machinery for working the butter have been improved correspondingly. Another improvement is in *Pasteurizing* cream, which is done by subjecting it to a temperature of 140° to 155° Fahr. Pasteurized cream contains forty to fifty per cent. of butter fat, is considered highly valuable for hygienic reasons, and retails for about forty cents per quart, thus rendering better profit than the butter.

The butter sold on the market is much better and more wholesome than that formerly produced. There are, of course, some exceptions, but as a rule it is much cleaner, more healthful, and pleasanter to the taste. Many of the improvements in manufacturing and in the quality of butter and cheese are due to legislation. The dairying enterprise as a whole has been benefited through the efforts of commissions, which have investigated the industry in foreign countries and utilized the more important discoveries in building up the enterprise in America. See **Creamery.**

DAISY (dā′zȳ), the common name of the well-known flowers and plants of the species *Bellis perennis.* It is widely distributed, being common to nearly all inhabited countries. The name was derived from its tendency to flower almost continually and means the *day's eye.* It was the emblem of fidelity in love in the age of chivalry. The common daisy of Europe has been greatly improved and is the plant which is cultivated most extensively in gardens. It includes both single and double flowering species and nearly all shades of colors. The *Oxeye daisy* is a species of chrysanthemum.



DAISY.
Oxeye Daisy; Common Daisy.

DAKOTA (dȧ-kō′tȧ), a family of Indians native to the vast regions between the Mississippi and the Rocky Mountains. It includes among others the Winnebagoes, Sioux, Omahas, Iowas, Poncas, Kansas, Crows, Otoes, Missouris, Assiniboins, and Minnetarees. The Dakotas seem to have come eastward from the Pacific until they met the Algonquins. The language shows some similarity to the Mongolian, perhaps more than that of any other Indian language. The total number of Dakotas now aggregates about 60,000. Some writers use the name interchangeably with Sioux, since they consider the Siouan stock the predominating influence.

DAKOTA RIVER. See **James River.**

DALE, Sir Thomas, Governor of Virginia, died near Bantam, East Indies, in 1619. He was knighted by King James in 1606 and three years later was sent to Virginia as Governor, where he administered the government on the basis of martial law. He planted new settlements near the falls of the James River, now Richmond, conquered the Appomattox Indians, and was succeeded as Governor by Sir Thomas Gates in 1611. When the latter returned to England in 1614, Dale again assumed the chief command. He returned to England in 1616 and in 1619 was made commander of the East India fleet. His laws in Virginia are known as *Dale's Code.*

D'ALEMBERT (dȧ-län-bâr′), the assumed name of Jean le Rond, mathematician and philosopher, born in Paris, France, in 1717; died Oct. 29, 1783. He was the son of poor parents who left him as an infant on the steps of the chapel of Saint Jean le Rond, from which he was named. In 1729 he was placed in the Collège Mazarin, where he studied physics, astronomy, and mathematics. Later he took a course in law and was admitted to the bar, but gave his attention chiefly to mathematics and philosophy. In 1751 he joined Diderot in editing the Encyclopédie, the great French work of reference, but withdrew from the editorship in 1758. Frederick II. of Germany offered him the presidency of the Berlin Academy and Catherine II. of Russia proposed that he become the tutor to her son, but he declined both offers and continued to reside in Paris. In 1755 he was admitted to the Institute of Bologna on the recommendation of Benedict XIV. His writings include a valuable treatise on fluids and one on dynamics. Among his chief works are "Memoirs of the Berlin Academy," "Treatise on Dynamics," and "Researches Concerning the Integral Calculus."

DALHOUSIE (dăl-hou′zĭ), **James Andrew Broun Ramsey,** statesman, born in Midlothian, Scotland, April 22, 1812; died Dec. 19, 1860. He was educated at Harrow and Oxford, succeeded to the title of Lord Ramsey by the death of his elder brother, and entered the House of Lords at the death of his father in 1838. Owing to his distinguished ability as a member of Parliament, he held many offices of honor and importance and in 1847 was appointed Governor General of India. His administration was no less marked by efficiency than that shown in Parliament, and he became known as one of the most successful and distinguished of Indian proconsuls. Besides effecting reforms, constructing telegraph lines, highways, railroads, and canals, he added Berar, Punjab, Oudh, Pegu, and other districts to the British possessions.

DALLAS (dăl′lȧs), a city of Texas, county seat of Dallas County, on the Trinity River, near the mouth of the West Fork. It is on the Kansas City Southern, the Southern Pacific, the Texas and Pacific, the Rock Island Lines, and other railroads. Lines of electric railways connect it with Fort Worth and other cities. The chief buildings include the county courthouse, the post office, the Carnegie Public Library, the Protestant Episcopal Cathedral of Saint Matthew, the Roman Catholic Pro-Cathedral, and a number of fine public schools. It has a fine Confederate monument. Oak Cliff and City Park are notable public grounds.

Dallas is surrounded by a productive farming country and has extensive wholesaling interests. The industries include iron factories, flouring mills, cigar and candy factories, cotton gins, grain elevators, machine shops, and farm implement manufactories. Many of the streets are substantially paved. It has gas and electric lights, waterworks, sewerage, and an extensive electric railway system. The first settlement was made in 1841. Population, 1920, 158,976.

DALLAS, Alexander James, author and statesman, born on the island of Jamaica, June 21, 1759; died Jan. 14, 1817. He descended from Scotch parents and studied in Edinburgh and Westminster, and removed to Philadelphia, Pa., in 1783. Two years later he was admitted to the bar and began a successful practice. President Madison made him Secretary of the Treasury in 1814, in which capacity he recommended the United States Bank authorized by Congress in 1816. He published a number of valuable reports and a work entitled "Exposition of the Causes and Character of the War of 1812-15."

DALLAS, George Mifflin, statesman, born in Philadelphia, Pa., July 10, 1792; died Dec. 31, 1864. He graduated from Princeton College, studied law with his father, Alexander James Dallas (1759-1817), and secured admission to the bar in 1813. His public career began as a private secretary to Albert Gallatin, who went to Saint Petersburg to negotiate a treaty with Great Britain through the Russian emperor. After returning to the United States, he engaged in the practice of law, became mayor of Philadelphia in 1828, and later was chosen United States district attorney. He was elected to the United States Senate in 1831, appointed minister to Russia in 1837, and elected Vice President as a Democrat in 1844. He served as minister to England in 1856, in which position he displayed much ability in relation to the questions pertaining to Central America.

DALLES (dălz), the name applied to various cataracts in the United States. The Dalles of the Saint Louis are cataracts located near Duluth, Minn. The Dalles of the Columbia are near Dalles City, Ore., on the Columbia River, about 200 miles from its mouth and fifty miles above the Cascades. Here the river is compressed by basaltic rocks to about one-third of its usual breadth, with lofty walls on both sides. The chasm formed in this way is fifty-eight yards wide, and through it the waters plunge in the form of a roaring torrent. The Dalles of the Wisconsin, near Kilbourne City, Wis., is about seven miles long and sixty feet wide. On both sides of the gorge are walls of Potsdam sandstone fully 100 feet high.

DALLES, The, or **Dalles City,** a city of Oregon, county seat of Wasco County, on the Columbia River and the Columbia River Highway, eighty-eight miles east of Portland. It is on the line of the Union Pacific Railway. The chief buildings include the high school, the county courthouse, and a number of churches. It has a large trade in grain, fruit, and live stock. The manufactures include flour, canned fruits, clothing and machinery. In the vicinity and down the river is much beautiful natural scenery. A military post was established at The Dalles in 1838 and the place was incorporated in 1858. Population, 1920, 5,807.

DALMATIA (dăl-mā'shĭ-ȧ), a province of Jugo-Slavia, extending along the Mediterranean, and bounded by Croatia, Montenegro, Bosnia, Herzegovina, and the Adriatic Sea. The area is 4,940 square miles. It contains ranges of the Dinaric Alps, a large number of coast inlets, and numerous small lakes and rivers. The greatest elevation is reached by Mount Orien, which rises 6,230 feet above the sea level. A large per cent. of the soil is fertile and is farmed, pastured, or occupied by forests. The mountain districts yield minerals, though mining is not highly developed. Among the chief products are cereals, fruits, domestic animals, cheese, silk, and vegetables. Though the least developed of Austrian dependencies, it has considerable shipbuilding. The people along the coast are largely seafaring and engaged in fisheries. A number of thriving cities are located on the Adriatic, where the chief centers of manufactures and commerce are situated. Several railway lines connect them with the interior districts.

The province was once an independent kingdom of considerable strength. It was conquered by the Romans in the reign of Augustus. Afterward it was overrun by the Goths and conquered successively by the Slavonians, Venetians, French, and Italians. Until 1919 it was a part of Austria, with the title of kingdom. The inhabitants consist mostly of Dalmatian Slavs, who resemble the Croats, and they are the modern representatives of the ancient Illyrians. Other elements include Germans, Italians, and Jews. Population, 1906, 598,764; in 1920, 646,062.

DALTON (da̤l'tŭn), **John,** chemist and philosopher, born in Cumberland, England, Sept. 5, 1766; died July 27, 1844. He studied in Eaglesfield and Kendal, after which he devoted his attention to mathematics and physical sciences and became teacher at Manchester. Beginning in 1804, he delivered lectures on chemistry in several large cities and soon after published his "New System of Chemical Philosophy." His discoveries relate largely to the constitution of mixed gases, the expansion of gases by heat, the force of steam, and the elasticity of vapors. In chemistry he announced the atomic theory, by which his reputation rapidly spread. Viewed as a discoverer, lecturer, and scientific writer, he ranks among the most noted learned men of England.

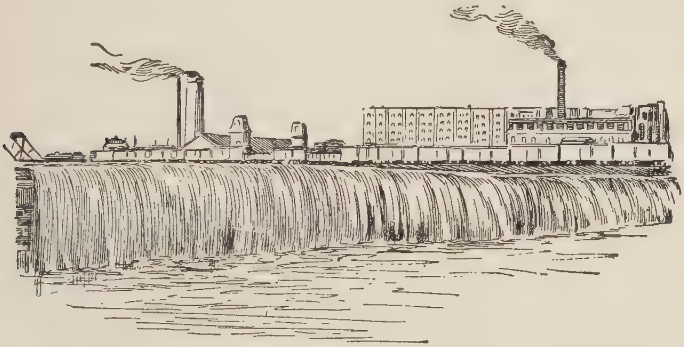
DALTON, county seat of Whitfield County, Georgia, 100 miles west of Atlanta, on the Southern and other railroads. The surrounding country has iron and limestone deposits. It has machine shops, cotton mills, and other industries. The chief buildings include the city hall, courthouse, high school, and federal building. It was settled and incorporated in 1848. Population, 1920, 5,222.

DALY (dā'lĭ), **John Augustin,** playwright, born in Plymouth, N. C., July 20, 1838; died in Paris, France, June 7, 1899. His career began as a dramatic writer for several newspapers of New York, among them the *Courier, Express, Citizen, Sun,* and *Times.* Among the productions adapted by him to the stage of this theater are "An Arabian Night," "The Merry Wives of Windsor," "The Merchant of Venice," "The Taming of the Shrew," and other Shakespearean plays.

DALZELL (dăl-zĕl'), **John,** public man, born in New York City, April 19, 1845. At the age of two years he was taken to Pittsburg, Pa., where he attended the public schools, and in 1865 graduated from Yale University. Two years later he was admitted to the bar and established a successful practice. In 1886 he was elected to Congress as a Republican and served in that body more than twenty years. He rose to prominence as a leader of his party, and, as a member of important committees, exercised a wide influence in national legislation.

DAM, a bank or structure to confine the flow of a stream in order to raise its level. Dams are usually built of stone, earth, or wood, though in recent times cement, steel, and cast iron have been utilized to a large extent. Those constructed in ancient times were largely for protection against overflows from rivers, or for safeguards against waves and tides on lakes and seas. Among the most important modern dams of this class are the great dikes of Holland and the levees in the lower course of the Mississippi. The former protect the lowlands against overflows from the sea, while the latter provide safety against general overflows during excessively rainy seasons. Many dams are maintained in streams to obtain power for machinery. In this class the water is raised sufficiently to permit currents to pass rapidly through artificial channels parallel to the main bed of the stream, thus obtaining a permanent flow of water where the force is applied. Another class of dams built which are extensively used includes those constructed to provide water for cities and for irrigation purposes. The New Croton dam, on the Croton River, was constructed to provide an immense storage reservoir for the water supply of New York City. It is 290 feet high and 216 feet thick at the base, and the solid masonry is 700 feet long, besides which an earthen dam lined with a wall of masonry is extended to a length of 1,500 feet. The structure forms a reservoir eighteen miles long with a capacity of 32,000,000,000 gallons of water, the cost being about $4,250,000.

A dam for irrigation purposes at San Diego, Cal., is 130 feet high and 545 feet long. It is constructed largely of steel and is protected from rusting by paints made of semiliquid asphalt. The capacity of the reservoir is 14,000,000,000 gallons. A dam almost entirely of steel is located near Ash Fork, Ariz., which has a capacity of 36,000,000 gallons. One of the notable dams is located on the South Platte River, Col., forming a reservoir for the water supply of Denver. The greatest height is 210 feet, but its site in a rocky gorge made it necessary to build it only twenty-five feet long at the base and 500 feet at the top. It is constructed of granite blocks, with an inner lining of steel plates, and is supported by steel beams. The reservoir is 200 feet deep at the dam, 150 feet three miles up the river, and fifty feet six miles above the dam. It has a storage capacity of 35,000,000,000 gallons of water. The Roosevelt dam, across the Salt River, seventy-two miles above Phoenix, Ariz., is of the arched gravity type and is 284 feet high. The dam across the Mississippi at Keokuk, Iowa, is a notable power-dam.


Dam at Saint Anthony Falls, Minneapolis, to furnish power for large mills.

The largest dam in the world is maintained by the Egyptian government across the Nile at the Assuan cataracts. The length of this remarkable structure is 6,400 feet, the width is eighty feet at the bottom and twenty-three feet at the top, and the height is ninety-two feet. It is constructed of granite masonry, its foundation being solid granite rock. It serves the purpose of collecting a supply of water from the Nile between November and April for the purpose of irrigating the land farther north during the months of May, June, and July. In the dry season the water is conducted by canals to the different cultivated fields. Through the agency of this improvement vast regions of arid land have been redeemed and made productive. The capacity of the reservoir is about 280,000,000,000 gallons. It is estimated that the entire cost of this dam, including locks and accessories, was $8,750,000. See Boulder Dam.

DAMAGES, in law, the amount of money a person may recover for the injury done by another to his person, property, or other rights. If damage is done through neglect or by a willful act, the party injured may recover in money the amount of the loss, and, if the damage results from a malicious act, the amount recovered may be larger than the actual loss. The courts of England and America generally agree that the person damaged may recover to make good the loss sustained, which is estimated in money, and in addition the defendant is required to pay the court expenses. When the damage results from causes over which no one has control, such as a storm or earthquake, or if it is chargeable to an accident for which no one is to blame, such as a horse running away, the injured party cannot recover.

DAMARALAND (dȧ-mä′rȧ-lănd), the northern portion of German Southwest Africa, extending from Walfisch Bay to the Kunene River. The area is about 100,000 square miles. The coast region is arid and desert, but the interior contains fertile tracts adapted to agriculture. It has valuable mineral products, including gold, silver, iron, and copper. Cotton, tobacco, silk, fruits, and live stock are the chief products. The drainage is largely toward the east by tributaries of the Zambezi. A large proportion of the inhabitants belong to the Bantu and Damara races. Population, 1922, 200,000.

DAMASCUS (dȧ-măs′kŭs), the capital of the Turkish vilayet of Syria, regarded the most ancient city of the world, called *Dimishk-esh-Shâm* by the natives. The Scriptures mention it on numerous occasions, connecting it with the time of Abraham and successively with other distinguished men, including Saint Paul. It is still one of the largest cities of Western Asia, is beautifully situated in a fertile plain of the same name, and is bounded on the north and west by the high mountain range of Anti-Libanus. Jerusalem is located about 140 miles west of Damascus and a railroad line connects it with the Mediterranean Sea at Acre. While possessing many points of interest which are mentioned by travelers, it contains narrow and angular streets, and in the poorer portions has many low houses that are filled with filth. The courts are paved with marble and ornamented with fountains. Many of the public places are adorned with trees and beautified by fine architectural structures. The chief buildings include the citadel and the Great Mosque built in the eighth century. About seventy-five mosques of considerable size are maintained in the city, in addition to fully 175 chapels for instruction and prayer.

The Moslems regard Damascus one of the holy cities. Its general features are thoroughly Oriental and it is the gathering place of great companies of pilgrims. Pilgrimages to Damascus began soon after the time of Mohammed, a number of his revelations being associated with it. In several portions are colonies of Christians and Jews, who are allowed religious liberty and educational advantages. Among its notable features are numerous bazaars, the various classes being located by themselves on different streets. Among the bazaars are those of the saddlers, silversmiths, shoemakers, booksellers, and others. In the midst of these stands the Great Khan, which forms a market place for merchants. Straight Street, mentioned in connection with the conversion of Saint Paul, is one of the most important commercial thoroughfares.

Much of the trade of Damascus is in the hands of Europeans. The manufactures include tobacco, fabrics, silk and cotton goods, jewelry, olive oil, damask, soap, and furniture. Formerly the celebrated Damascus steel was produced largely in the city, but its manufacture is no longer carried on. The population is made up of many classes, including Kalmuks, Turkomans, Afghans, Kurds, Circassians, and Europeans. A large trade is carried on with the interior of Asia by caravans of camels, while within the immediate vicinity it is facilitated by a number of canals. The building of railroads, telephone and telegraph lines, and other modern facilities has enlarged its importance commercially. A macadamized road was built between it and Beyrout in 1860. The educational status is somewhat better than formerly, owing largely to the work done by Christians. Damascus has been the seat of much military contention and passed successively under the Israelites, Persians, Greeks, and Romans. It has been under the dominion of the Turks since 1516. Population, 1923, 212,641.

DAMASCUS STEEL, a kind of steel made originally in Syria, so named from Damascus, where it was used largely in manufacturing cutlery and swords. It has been known to Europeans since the time of the Crusades, but the secret of making the Damascus blades, a kind of sword, is not well understood. Damascus steel is noted for its temper, hardness, and durability. It requires careful forging and workmanship and contains a larger per cent. of carbon than ordinary steel. The Damascus blades are beautified by ornamental designs, including inscriptions and landscapes. The art of producing these is called *damaskeening.*

DAMASK (dăm′a̮sk), a rich silk fabric originally made at Damascus, from which it is named. It is distinguished by raised figures of animals, landscapes, flowers, and fruits in their natural colors embossed upon a white or colored base. The name is now given to various products made of silk, wool, linen, or cotton, and to a mixture of several of these colored differently. Damask textiles are used for window curtains, fine towels, napkins, tablecloths, and furniture coverings. The figures of fruits, flowers, vases, and other objects placed on the surface are produced by a particular management of the warp threads. Damasks of this character are made extensively in America and Europe.

DAMIEN (dȧ-myan′), **Joseph de Veuster,** Catholic missionary, born at Tremeloo, Belgium, in 1840; died on Molokai Island, April 10, 1889. He became a priest at the age of nineteen and gave zealous attention to the church. As a missionary at Honolulu his work was effective, but he soon after devoted his attention to the lepers who had been banished to the island of Molokai, one of the Hawaiian group. He settled among them in 1873, officiating as teacher, physician, magistrate, carpenter, and general assistant. In 1885 the dreaded disease laid hold upon him but he continued his useful service until his death.

DAMIETTA (dăm-ĭ-ĕt′tȧ), a city of Egypt, on the eastern branch of the Nile, about five miles from the Mediterranean Sea. The main part of the city is built irregularly, but some of the streets are well improved. It is the seat of several European consuls, a Coptic bishop, and an Egyptian governor. Among the public improvements are electric lights, marble baths, and a number of ancient mosques. Large vessels cannot ascend the river to Damietta, owing to sand bars at its mouth. It has railroad connections with Cairo and other centers of commerce. The manufactures include clothing, cotton fabrics, and utensils. It was strongly fortified by the Saracens in the time of the Crusades. The construction of the Suez Canal has caused its commerce to decline. Population, 1922, 32,642.

DAMOCLES (dăm′ô-klēz), a flatterer and courtier of the elder Dionysius, the tyrant of Syracuse. From Cicero we learn that Damocles lauded the happiness of the royalty and that he was reproved by Dionysius in positive terms. While seated at a splendid banquet, surrounded by royal splendor, he looked up suddenly and noticed a keen-edged sword suspended by a horsehair directly over his head. The lesson was a forceful one to teach him the uncertainty of the life and happiness of a king.

DAMON AND PYTHIAS (dā′mŏn, pĭth′ĭ-a̮s), the name of two celebrated Pythagoreans of Syracuse, whose faithful friendship is proverbial. Dionysius, the tyrant of Syracuse, had condemned Pythias to die, when he was asked to allow the prisoner to return home to see his wife and children once more. The request was finally granted, but not before Damon pledged his own life for the reappearance of his friend. In the meantime the river rose on account of great rains and the return of Pythias was delayed, but he appeared at the last moment to save Damon from death. This example of mutual affection so impressed the tyrant that Pythias was pardoned and Dionysius asked to be admitted to their friendship. Upon this historical incident is based the modern fraternal order of the Knights of Pythias.

DAMPS, the name generally applied to gaseous products fatal to animal life. Damps frequently occur in coal mines, wells, and other excavations, especially if they are covered up and unused for some time. *Choke damps* are composed of carbonic acid mixed with carbonic oxide, being so called from their tendency to extinguish life and fire. *Fire damps* consist largely of light carbureted hydrogen and are so named because of their tendency to explode when mixed with atmospheric air, after being brought in contact with a flame.

DAMROSCH (dăm′rŏsh), **Leopold,** composer and conductor, born in Posen, Germany, Oct. 22, 1832; died Feb. 15, 1885. He graduated at the University of Berlin, where he was granted a doctor's degree, and soon established a successful practice in his native city. In 1855 he began to play as a concert violinist, appearing successfully in Magdeburg, and formed the friendship of Liszt. Subsequently he was director of music in Posen and Breslau, came to America in 1871, and engaged as director of the Arion Society in New York City. In 1873 he established the New York Oratorio Society and later the Symphony Society, which he conducted until his death. He is the author of numerous concertos, songs, and cantatas and made many contributions to periodicals.

DAMROSCH, Walter Johannes, musician, son of Leopold Damrosch, born in Breslau, Germany, Jan. 30, 1862. He came to the United States with his father in 1871, took extensive training in music, and assisted in organizing the Symphony Society and the New York Oratorio Society. He became director of the Newark Harmonic Society in 1881, and in 1885 succeeded his father as conductor of the societies organized by him. In 1900 he was made conductor of German operas at the Metropolitan Opera House, New York, and is the author of a number of songs and oratorios. His opera entitled "The Scarlet Letter" is founded on the novel by Hawthorne.

DAMSON (dăm′z′n), the name of a common plum tree which bears small oval fruit. Numerous species have been developed by cultivation. They bear fruit of various colors, such as yellow, bluish, dark purple, and black. They were imported originally from Damascus and are cultivated extensively in the Temperate zones. Some species are used in making a confection called *damson cheese.*

DAN, the fifth son of Jacob, after whom one of the twelve tribes was named. The Danites numbered 62,700 adult males at the time of the Exodus and constituted in point of numbers the second tribe. Samson was a Danite. The tribe lost its identity by mingling with other tribes soon after the time of David. Laish, a city in the northern part of Israel, was renamed Dan after the conquest of Canaan. It was connected with Beersheba in the phrase "from Dan to Beersheba," meaning the whole land of Israel.

DANA (dā′nȧ), **Charles Anderson,** journalist, born at Hinsdale, N. H., Aug. 8, 1819; died Oct. 17, 1897. He was educated at Harvard, after which he joined the Brook Farm community at Roxbury, Mass., where he remained in 1842-44. He was managing editor of the New York *Tribune* for fourteen years, beginning in 1848, and served as Assistant Secretary of War from 1863 to the close of the rebellion. Subsequently he became editor of the Chicago *Republican,* which afterward resulted in a failure. He organized a stock company in 1868 and bought the New York *Sun,* becoming its editor. As a journalist he was able, sarcastic, and critical, and as a politician he was inclined to be erratic and positive. His ability and industry made the *Sun* a powerful factor in American politics. Among his most important writings are "Life of Ulysses S. Grant" and "The Art of Newspaper Making." He was editor of the "Household Book of Poetry," compiler of the "Fifty Perfect Poems," and translator of "The Black Ant." In connection with George Ripley, he edited the "New American Cyclopaedia" and later assisted in its revision.

DANA, James Dwight, naturalist, born at Utica, N. Y., Feb. 12, 1813; died April 14, 1895. He graduated at Yale in 1833 and became a teacher of mathematics at the United States Naval Academy. While serving in the latter capacity, he was sent on an expedition to the Mediterranean for the purpose of making scientific observations. In 1836 he was appointed United States geologist and mineralogist and pursued extensive investigations, which were reported in the "Reports on Zoöphytes," "Reports on the Geology of the Pacific," and "Reports on Crustacea." He was a skillful scientist and had remarkable capacity for research, giving the world much new and useful information. Among his important works are "The System of Mineralogy," "Corals and Coral Islands," "Manual of Geology," "Text-Book of Geology," and "Characteristics of Volcanoes."

DANA, Richard Henry, poet and essayist, born in Cambridge, Mass., Nov. 15, 1787; died Feb. 2, 1879. He studied at Harvard for three years, was admitted to the bar, and applied himself to literature. He became a contributor to the *North American Review* in 1817, remaining with that periodical for three years, a portion of which time he was associate editor. His writings were effective in cultivating a literary taste and interest in essays. He delivered lectures on Shakespeare and wrote several poems, among them "The Dying Raven" and "The Buccaneer." His most important works in prose were published in *The Idle Man,* a periodical which he issued.

DANA, Richard Henry, lawyer and author, son of the above, born in Cambridge, Mass., Aug. 1, 1815; died in Rome, Italy, Jan. 7, 1882. He studied at Harvard, but was compelled to abandon attendance at the institution on account of impaired sight, and soon after engaged as sailor on the *Pilgrim,* a vessel that sailed to California by the way of Cape Horn. Later he embodied the experiences of his voyage in his celebrated book, "Two Years Before the Mast." Entering Harvard again, he graduated in 1837, and, after studying law, was admitted to the bar in 1840. He aided the movement to form the Free Soil party, and supported the Republican party from its beginning. He made a trip around the world in 1859-60 and, on reaching Massachusetts, was appointed United States district attorney. He was a member of the Legislature in 1867-68, was defeated for Congress by General Butler, and was nominated for minister to England by General Grant, but the appointment was not confirmed. His confirmation was opposed by General Butler and W. B. Lawrence, the latter charging him with infringement of his copyright in revising Wheaton's "International Law." Besides contributing extensively to the *North American Review,* he wrote "The Seaman's Friend," "Memoirs of Edward Channing," and "Memoirs of Washington Allston," and revised Wheaton's "International Law."

DANAIDES (dăn-ā'ĭ-dēz), in Greek legends, the fifty daughters of Danaus, King of Argos. They married their fifty cousins, sons of Aegyptus, and, by the command of their father, who suspected his sons-in-law, they all killed their husbands in one night, except only Hypermnestra, who spared her husband, Lynceus. As a punishment for the murders they were condemned to the lower world and compelled to endeavor to fill with water a vessel full of holes —a never-ending and useless task—in which they were mocked with the delusive hope of ultimate success.

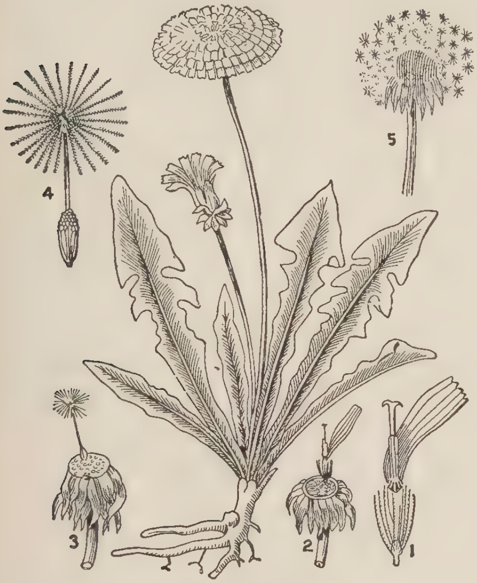
DANBURY (dăn'bẽr-ĭ), a city and one of the county seats of Fairfield County, Connecticut, on the Still River, a tributary of the Housatonic. It is on the New York, New Haven and Hartford Railroad and on several electric lines. The noteworthy buildings include the courthouse, the public library, the city hall, and the high school. It has a fine public park and two monuments, one of which was erected to the memory of General Wooster in 1854. Among the manufactures are hats, carpets, shirts, clothing, rugs, medicines, machinery, and utensils. It has paved streets, waterworks, electric lights, street railways, and other modern facilities. The first settlement was made in 1684 and it was incorporated as a city in 1889. At the time of the Revolution, in 1777, it was captured by the British under General Tryon. Population, 1900, 16,537,; in 1920, 18,889.

DANCING (dȧn'sĭng), an amusement or exercise in which one or more persons move the body successively in rythmical order, usually accompanied by music. It consists of steps, bounds, and inclinations of the body, and all the movements are executed with a care designed to make them artistic. In ancient times dancing was a part of the religious observances and worshipers danced before the altars and images of their gods. The Egyptians considered their god Thoth as the inventor of dancing. In Greece it expressed all the different passions from the genteel and beautiful to the dance of the Furies, which inspired the beholders with terror. It played an important part in the sculptures of Greece and was classed with poetry by Aristotle. In Rome dancing was permitted by free citizens only as a religious rite, but in Egypt and India it was employed in public, where dancing and singing girls entertained on public occasions.

Dancing was not practiced extensively after the fall of Rome, largely for the reason that it was discouraged by Christianity on the ground that it was inherited from the Jews and pagan nations. Its revival began in the fifteenth century, when it gained favor in Italy and was introduced by Catherine de' Medici into France. War and harvest dances were given in Germany even before that time. The *carole* and *egg dance* were among the dances of England. Savage warriors practiced dancing to a considerable extent, as exemplified by the American Indians in their celebrated war dances. The Protestant churches either forbid it or look upon it with a measure of disapproval.

The art of dancing has been modified from time to time and has varied in the extent to which it has been practiced. Among the dances characterized as national are the *polonaise* of Poland, the *fandango* of Spain, the *tarantella* of Italy, the *jig* of Ireland and Wales, the *waltz* of Germany, and the *reel* and *Highland fling* of Scotland. The *breakdowns* are popular among the Negroes and the *step dances* and *hornpipes* are quite common among sailors. Among the modern dances common in America are the *quadrille,* the *two-step,* the *fox trot,* the *lancers,* the *waltz,* the *ballet,* the *one-step,* the *cotillion,* and the *schottisch.*

DANDELION (dăn-dė-lī'ŭn), a plant native to Europe, but now common in America. It has a naked, hollow stock, with a composite, bright yellow flower. The leaves rise from a tap root in the form of a bunch. The seed has a white, downy tuft of hair and is scattered extensively by the winds. In many places the dandelion is an obnoxious weed in lawns and parks. Its blanched leaves are recommended as a salad and are eaten as lettuce in the form of greens. The plant yields a milky juice, which, in the form of extract, is employed for medicine. Its roots have been used to adulterate coffee in a way quite similar to chicory. Though small in the native state, the plants have been greatly enlarged and improved by cultivation.



DANDELION.

1, Floret; 2, involucre and floret; 3, involucre and fruit, 4, fruit with pappus; 5, involucre and ripened fruit.

DANDOLO (dän′dô-lô), the name of a celebrated Venetian family, from which four doges came to the republic. Enrico was the most illustrious of its members. He was born in 1110 and died at Constantinople, Turkey, June 1, 1205. His learning and eloquence caused his rapid political rise, and they were instruments that ultimately led to his election as doge in 1192. While in this office he extended the boundary of the republic. He was a distinguished leader of the third Crusade, at which time he conquered Constantinople, following the murder of Emperor Alexius. Soon after he established the empire of the Latins and succeeded in securing the election of the Count of Flanders as emperor. His body was buried in the church of Saint Sophia. Several monuments were erected to his honor, but they were destroyed by the Turks in 1453.

DANE, Nathan, jurist, born at Ipswich, Mass., Dec. 27, 1752; died Feb. 15, 1835. In 1785 he began a three years' service in the Continental Congress, in which he was an influential member. He was elected United States Senator in 1794, serving four years, and published "Digest of American Law," a work in nine volumes.

DANDURAND, Raoul, public man, born at Montreal, Que., Nov. 4, 1861. He studied at Montreal College and Laval University, where he graduated, and in 1883 was admitted to the bar. In 1898 he was elected a member of the Dominion Senate, of which he was speaker from 1905 to 1909. Since 1921 he has been a minister without portfolio. He is proficient as a speaker both in English and French. In 1925 he was elected president of the Assembly of the League of Nations.

DANENHOWER (dă′nẹn-how-ẽr), **John Wilson,** arctic explorer, born in Chicago, Ill., Sept. 30, 1849; died in Annapolis, Md., March 20, 1887. He graduated from the United States Naval Academy in 1870, accompanied a surveying expedition to the North Pacific, and assisted in subduing a rebellion in Honolulu, Hawaii, in 1873. When General Grant visited Egypt, he served on board the *Vandalia* and joined the *Jeannette* in 1878, which sailed on an Arctic expedition from Havre, France. The expedition passed through Bering Straits and sailed northward in the Arctic Ocean until the vessels were crushed by ice. The crew left the steamer, and, dragging their boats over ice for ninety-five days, embarked in open water, but were separated by a storm. The boat in which Danenhower sought safety entered the Lena delta Sept. 17, 1881, but the others of the crew perished. He arrived in America with several of his crew in June, 1882. The events of this expedition were embodied by him in "The Narrative of the Jeannette."

DANIEL (dăn′ĭ-ĕl), one of the four greater prophets of the Hebrews. He was a descendant from a celebrated family of Judah, and was carried in youth as a captive to Babylon with other Hebrews in the third year of Jehoiakim, about 604 B. C. He was brought up in the king's service and was chosen to give instruction in the literature and language of the Chaldaeans. After some years he interpreted a dream for Nebuchadnezzar and rose to distinction, being made governor of the province of Babylon and given the office of inspector of the priestly caste. He held this position under Darius and at least until the third year in the reign of Cyrus the Great. His devotion to the worship of God was steadfast and, rather than forsake the teachings of his fathers, he chose to be cast into a lion's den, where he was preserved by angels. Later he assisted his people to return from captivity to their native land.

Daniel wrote one of the most important prophetic books of the Old Testament, which was honored by quotations in the ministry of Christ. It was written partly in Hebrew and partly in Aramaic, and is divided into twelve chapters. The first part is devoted to narratives and the second part to predictions. The history of the Chaldaean, Median, Persian, and Macedonian empires is portrayed in the prophecies of Daniel, and they finally terminate in prophecies of the eternal kingdom of Christ

The name Daniel is a Hebrew word, meaning God is judge. While in Babylonian captivity, his name was changed to Belteshazzar, meaning the prince whom Bel favors.

DANIEL, John Warwick, statesman, born in Lynchburg, Va., Sept. 5, 1842; died June 29, 1910. He studied at Lynchburg and entered the Confederate army, serving throughout the war. Later he took up the study of law and began to practice in 1866. He was chosen a member of the Virginia House of Delegates for two terms, later served in the State Senate, and was elected to Congress in 1884. In 1887 he was elected to the United States Senate as a Democrat to succeed William Mahone and was reelected in 1893, in 1899, and in 1905.

DANIELL, (dăn'el), **John Frederick,** celebrated scientist, born in London, England, March 12, 1790; died March 13, 1845. He was a student of Brande and was elected a fellow of the Royal Society in 1814. His inventions include a pyrometer, the hydrometer, and a voltaic battery. The last mentioned, known as the *Daniell battery,* is in extensive use in telegraph offices and wherever a continuous working battery with a low current is serviceable. Among his writings are "Introduction to Chemical Philosophy," "Meteorological Essays," and "Essays on Artificial Climate."

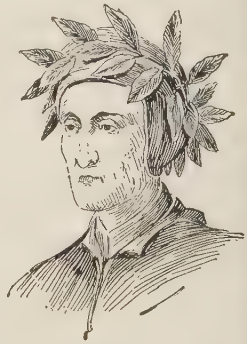
DANIELS, Josephus, public man, born at Washington, N. C., May 18, 1862. He received an academic education, became state printer, and in 1893 was chosen chief clerk of the Department of the Interior. Subsequently he published the *Raleigh News and Observer.* In 1913 he was made Secretary of the Navy.

DANISH WEST INDIES, now the Virgin Islands, a group of three islands situated east of Porto Rico and classed with the Virgin Islands. The area is 138 square miles, which includes some tracts of marshy lands. The area of each of the three islands is as follows: Saint John, 21 square miles; Saint Thomas, 23 square miles; Saint Croix, 74 square miles. A large part of the inhabitants consists of negroes and mulattoes and more than half are on the island of Saint Croix. Christiansted, on Saint Croix, is the seat of local government.

The Danish West Indies, though of little importance commercially, possess value as stations for steamship lines crossing the Atlantic. Excellent harbors are located at Christianstad and Charlotte Amalie, on Saint Thomas, in fact, the latter is one of the deepest and safest in the West Indies. Two cable lines, one French and the other English, connect Saint Thomas with European ports. The exports consist chiefly of sugar and rum, and trade is almost exclusively with the United States and Denmark. A Spanish dialect is the chief language, but English and Danish are spoken in the courts. The revenue has been insufficient to cover the expense for a number of years, owing to the fact that it is obtained chiefly from customs, and the shortage arises because trade is not large. Negotiations were made a number of times to sell the islands to the United States, but in 1902 the treaty of sale was rejected by the Danish Parliament. However, in 1917, the transfer was made in consideration of $25,000,000. These islands are valuable as a defense of the Panama Canal and add to the value of Porto Rico as an American trading center. Population, 1920, 26,051.

DANNAT, William T., painter, born in New York City in 1853. After securing a general education and doing work as a painter, he studied in Munich and Paris, and in the latter city was teacher at the Ecole des Beaux-Arts. In 1881 he became a member of the Society of American Artists and in 1889 served on the International Art Jury. The cross of the Legion of Honor was awarded to him in the latter year. His paintings include "The Quartette," now in the Metropolitan Museum of New York City; "Sacristy in Aragon," in the Chicago Art Museum; and "Lady in Red," in the Luxembourg. A number of his paintings were on exhibition at the Louisiana Purchase Exposition in 1904 and at the Lewis and Clarke Exposition, Portland, in 1905.

DANTE (dăn'tê), **Alighieri,** famous poet, born in Florence, Italy, May 14, 1265; died at Ravenna, Sept. 14, 1321. He descended from an ancient family of the lower nobility, was educated under the learned Brunetto Latini, and became familiar with the sciences of his age and with the writings of many famous poets, including Horace, Virgil, Statius, and Ovid. At Bologna and Padua he studied philosophy, in which he excelled, and later pursued a course in theology at Paris. He met Beatrice Portinari, the daughter of a rich citizen, when she was only eight years old. The impression made upon him and the love he bore for her were a poetic inspiration ever afterward. She married Simone de Bardi, a nobleman, but died young, in 1290. Dante married Gemma, of the powerful house of Donati, some time after the death of Beatrice. Dante took an active part in military activities, engaging in the battle with the Arentines in 1289, and was present at the capture of Ceprona in 1290. When the factional divisions of the Guelphs and Ghibellines agitated Florence, he sided with the latter in opposition to the Guelphs, who were strong adherents of the Pope. Dante was sent to Rome on an important embassy to the Pope, and became at enmity with Boniface because that divine actively favored the Neri as against the Bianchi. His


ALIGHIERI DANTE.

absence from Florence gave his enemies an opportunity to secure a decree of banishment against him and he remained in exile to the end of his life. While in exile he traveled extensively, visiting many European cities of note, but after 1320 he remained mostly with his friend Guido da Polenta, in Ravenna. His death occurred at that city, where his bones are still preserved. His first work, "Vita Nuova," appeared in 1300. It is a poetic collection bearing on his youthful love for Beatrice. His fame rests on his immortal production, "The Divine Comedy."

The republic of Florence set apart a sum of money at the suggestion of Boccaccio about fifty-two years after the death of Dante. This was expended for lectures in which "The Divine Comedy" was explained to the people in one of the churches, the first lecturer being Boccaccio, and later several other cities followed the same course. This poem was instrumental in making the Italian language one of beauty, instead of remaining unformed and rude. It has been translated into many languages, the number being estimated at fully three hundred. The author was spoken of by Boccaccio as a man of medium stature, stooping form, slow in gait and speech, and silent and reserved, but dignified and eloquent when he spoke. Music and painting were objects of his study and devotion.

"The Divine Comedy" was written largely while he was in exile. It has three parts, entitled *Hell, Purgatory,* and *Paradise.* The dreams of the poet carry him into a dusky forest, where he is met by the shade of Virgil, who offers to conduct him through Hell and Purgatory. He may not proceed further, but Beatrice shall lead him through the beauties of Paradise. In the superb imaginative power the journey through Hell is described, and the characters of guilt and punishment are laid before us with a clearness and earnestness that impress one with awe. He ascends with Virgil to Purgatory and beholds similar scenes, though punishment is but temporary. Virgil now leaves him that he may be taken by Beatrice and led to scenes of surpassing magnificence. Ascending with her into the celestial Paradise, passing over seven spheres, he reaches the eighth, where the triumphant Redeemer is surrounded by a glorious company. Dante feels himself in the presence of divine essence when reaching the ninth and in the tenth the Deity himself is sitting, but Dante cannot see him for excess of radiant light. The whole has been magnificently illustrated by the great painter Doré.

DANTON (dăn′tŭn), **George Jacques,** revolutionist, born at Arcis-sur-Aube, France, Oct. 28, 1759; guillotined April 5, 1794. He was educated for the profession of law, practiced at Paris, and became an active leader in the Revolution. He was an organizer with Mirabeau, and with Marat and Camille Desmoulins instituted the Cordelier Club, which was the central resort of the revolutionists. The attacks on the Tuileries Aug. 10, 1792, were due largely to his agitation. Soon after he was made minister of justice, later a deputy from Paris to the common council, and subsequently president of the committee of public safety. As deputy he voted for the death of Louis XVI. and aided in bringing Hérbert and others to the scaffold. Early in 1793 he began to lose prestige with the forces he had aroused, and the tireless Robespierre became the more influential. He was thrown into prison in 1794, and condemned by the revolutionary party as an accomplice in a conspiracy to restore the monarchy and guillotined. He met death in a defiant manner, and predicted the fate of Robespierre with singular certainty.

DANTZIC (dănt′zĭk), or **Danzig,** a seaport of Germany, capital of West Prussia, on the west branch of the Vistula River, about three miles above its mouth. However, its port, Neufahrwasser, is at the mouth of the Vistula. It is strongly fortified by a moat and ramparts and these are strengthened by twenty bastions and several detached forts. Among the principal buildings are a cathedral built in the fourteenth century, the Church of Saint Catharine, several monasteries, synagogues, observatories, and theaters. Langgasse is the finest street in the city, and, owing to its lofty gables built after the style of architecture common to the sixteenth and seventeenth centuries, its appearance is picturesque. Other noteworthy features include the public market, the city library of 150,000 volumes, and the railway depot. The commerce consists largely in wheat, amber, machinery, wool, starch, and leather. Shipbuilding and the manufacture of artillery and machinery engage large numbers of workmen. The general manufactures include hardware, clothing, and textiles. It has extensive railroad and electric railway facilities, municipal waterworks, gas and electric lighting, and stone and asphalt pavements. The first mention of the city was in 997, when it became identified with Christianity. In 1358 it joined the Hanseatic League. It belonged to Prussia from 1793 until 1919; in the latter year it was internationalized. Population, 1905, 159,648; in 1920, 170,347.

DANUBE (dăn′ūb), the second largest river of Europe, being exceeded in length only by the Volga. The Brege and the Brigach, two streams having their source in the Black Forest of Germany, unite at Donaueschingen and form the Danube. The length is 1,750 miles and the area drained by it includes 315,000 square miles. At the union of the two rivers that form it the height is 2,265 feet above the sea level, the average fall is eighteen inches per mile, and its waters flow through a delta of seven branches into the Black Sea. The principal tributaries are the Drave, Save, Theiss, and Pruth rivers. After leaving Germany, it passes through Austria, between which and Servia it forms a portion of the boundary, thence passes between Servia and Rumania, thence between Rumania and Bulgaria, and thence makes a bold curve north and east to a point between Rumania and Russia, where its waters unite with the sea. Of its 400 tributaries about one hundred are navigable, while Ludwig's Canal connects it with the Rhine and the Moldau and Muhl canals with the Elbe, and several others widen its sphere of commercial importance.

The three principal divisions of the Danube system include the river from its source to Passau, where it leaves German territory; thence the middle course, ending at the Iron Gate, below Orsova; thence the lower course to the sea. The middle course is especially beautiful in scenery, rapids, and cataracts. At the Iron Gate the stream has a width of only 129 yards and its waters are piled up to a depth of twenty-eight fathoms. At each side great ledges of rock tower above the surface and form a continuous line of beautiful panorama. The delta contains a vast area, equal to about 1,000 square miles, covered with dense rushes and cut up by winding channels, where sea birds and various animals find a safe and favorite haunt. Three main channels are included in the delta. They are known as the Kilia, Saint George, and Sulina mouths, and the last named is the one through which ships enter. The mouths farthest apart are sixty miles from each other. Owing to its favorable location through densely populated regions and to its deep water, the Danube is one of the most important rivers to commerce. Great numbers of steamboats ply on its surface and reach hundreds of commercial centers, the total connected navigation facilities constituting about 2,500 miles. The navigation is controlled by the International Navigation Commission, which is composed of delegates appointed by the riparian or great powers. This commission has made extensive improvements in various portions, particularly by a great canal at the Iron Gate.

DANVERS (dăn'vẽrz), a town of Essex County, Massachusetts, about eighteen miles northeast of Boston, on the Boston and Maine Railroad. Among the chief buildings are the State insane hospital, the high school, and the Peabody Institute Public Library. The manufactures include lumber products, boots and shoes, ironware, clothing, machinery, and carpets. It has systems of waterworks, public lighting, and electric street railways. In 1692 it was implicated in the Salem witchcraft delusion. It was incorporated in 1752. Population, 1905, 9,063; in 1920, 11,108.

DANVILLE, a city in Illinois, county seat of Vermilion County, on the Big Vermilion River and on the Big Four, the Wabash, and the Chicago and Eastern Illinois railroads. The surrounding country is rich in coal deposits, building material, and fertile soil. Among the noteworthy buildings are the courthouse, the Carnegie Library, the post office, the high school, and the Y. M. C. A. building. Douglas and Lincoln parks are fine public grounds. It has systems of paving, sewerage, waterworks, and electric street railways. It was settled in 1830 and incorporated in 1867. The manufactures include hardware, bottles, engines, brick, butter, machinery, clothing, and utensils. Population, 1900, 16,354; in 1920, 33,750.

DANVILLE, county seat of Boyle County, Kentucky, forty miles south of Frankfort, on the Southern and other railways. Besides having a fine school system, it is the seat of Center College, Kentucky School for Women, and Kentucky School for the Deaf. Herrington Lake is four miles from the city. It has extensive railway shops. The industries include machine shops, grain elevators, and stock yards. It is surrounded by a rich agricultural and stock-raising country. Danville was incorporated in 1789. Population, 1900, 4,285; in 1920, 5,034.

DANVILLE, a borough and county seat of Montour County, Pennsylvania, on the north branch of the Susquehanna River, 150 miles northwest of Philadelphia. It is on the Lackawanna, the Pennsylvania, and the Philadelphia and Reading railroads. The noteworthy buildings include the public library, the high school, the courthouse, and the State hospital for the insane. Among the manufactures are iron and steel wares, silk goods, stockings, suspenders, and custom-made clothing. It has extensive blast furnaces and rolling mills. The surrounding country is rich in agricultural and mineral products. Population, 1900, 8,042; in 1920, 6,952.

DANVILLE, a city of Virginia, in Pittsylvania County, on the Dan River, 140 miles southwest of Richmond. It is on the Danville and Western and the Southern railroads. An abundance of water power for manufacturing is furnished by the river. The manufactures include flour, cotton and knit goods, ironware, cigars, tobacco, clothing, and machinery. The output of the tobacco factories is particularly large. Besides fine public schools, it contains the Averett College, the Danville Military Institute, and the Randolph-Macon Institute. Among the municipal improvements are gas and electric lights, waterworks, pavements, and an extensive street railway system. Danville was incorporated in 1792. It was the capital of the Confederate States for a short time near the close of the war. Population, 1920, 21,539.

DAPHNIA (dăf'nĭ-ȧ), a genus of fresh-water crustaceans, known popularly as the water flea. These animals have a bivalve shell, long swimming antennae, and five pairs of feet. A compound eye is attached to the head, which is elongated into a snout. They are abundant in ponds and are important as the diet of many fishes.

DARDANELLES (där-dȧ-nĕlz), the Hellespont of the ancients, so named from Dardanus, the mythical founder of Troy. The strait is forty miles long and from one to four miles wide. It separates Europe from Asia at this point, and connects the Sea of Marmora with the Aegean Sea. A current flows through it from the Sea of Marmora, which is often increased by winds. The country on the European side is hilly, but is in a high state of cultivation and densely populated, while on the Asiatic side is a fertile plain, rising toward the range of Mount Ida with gradual ascent. Two castles mark the sites of the ancient Sestos and Abydos, while strong fortifications guard it on both sides. In 1841 a treaty was made by the five great powers and Turkey to the effect that no warship shall pass the strait, except with the expressed permission of Turkey. Abydos, on the Asiatic side, is celebrated for the story of Hero and Leander. It is noted for the passage of the armies of Xerxes in 480 B. C., when invading Europe, and that of Alexander in 334 B. C., when leading his famous expedition into Asia. Lord Byron, to demonstrate the possibility of the reputed feat of Leander, swam across the strait. See **War.**

DARE, Virginia, the granddaughter of John White, and the first child born of English parents in America. Mr. White was sent, in 1587, by Sir Walter Raleigh as Governor of the colony of Virginia. She was born in 1587 and named after the region of Virginia. Her husband, Mr. Dare, was an assistant to her father.

DARFUR (där'fōōr), the name applied to the western portion of eastern Sudan, in Africa. It has an estimated area of 200,000 square miles and a population of 2,500,000. In 1874 it was reduced by Ziber Pasha and placed under the control of Egypt. The British claims were strengthened by an agreement with Germany and Italy in 1891. A battle with the French troops at Fashoda resulted in an agreement between France and England, signed March 21, 1899. By the terms of this treaty the western boundary of Darfur is to mark the sphere of influence between the two powers in Central Africa. The district is drained largely by the head waters of the White Nile and Shari rivers. It contains large tracts of desert lands in the north, but there are quite productive regions toward the south. Cotton, wheat, tobacco, sesame, maize, and fruits are grown. Cattle raising is the principal industry. A majority of the inhabitants are Arabs, who profess Islam. The government is administered from El Fasher, its capital.

DARIEN (dā-rĭ-ĕn') **Gulf of,** a gulf extending from the Caribbean Sea, between the Isthmus of Panama and the mainland of South America. It receives the inflow of several rivers, including the Atrato, has a number of seaports, and is the most prominent inlet on the northern coast of Colombia. The southern portion is known as the Gulf of Urabá.

DARIEN, Isthmus of, the name applied to a neck of land between the Gulf of Darien and the Pacific Ocean, and sometimes to the entire isthmus which connects North and South America, though the name usually applied to the latter is Panama. See **Panama, Isthmus of.**

DARIEN SCHEME, a proposition to establish a colony on the Isthmus of Darien with the view of controlling the trade between the Western and Eastern hemispheres. It was formulated by William Patterson, a Scotchman, in 1695, and about $4,500,000 was subscribed to finance the scheme. In 1698 about 1,200 colonists sailed from Scotland to their prospective new home, which was called New Caledonia. A second company was sent out in 1699 and a third the following year, but the project proved an entire failure. The colonists found the region unhealthful, suffered by disease and starvation, and were harassed by the hostile natives and Spaniards.

DARIUS (dȧ-rī'ŭs), **I.,** or **Darius Hystaspis,** the fourth King of Persia, born in 558 B. C. He was a Persian of the Achaemenian line, conspired with six other nobles to murder Smerdis, and became king in 521 B. C. Caution and skill made it possible for him to govern vast dominions for thirty-six years. When Babylon revolted, he laid siege for two years and brought that fortified city to terms. Later he organized an army of 600,000 men, with which he crossed the Bosporus by a bridge of boats, intent on conquering the Scythians on the Danube, but retreated and sent an army under Mardonius to invade Greece. The enterprise failed on account of a victory won by the Brygi in Thrace, who cut his army to pieces. Darius promptly organized a second expedition of 500,000 men, but was met by Miltiades with an Athenian army 10,000 strong in the fields of Marathon, in 490 B. C., and was completely defeated. He died in 485 B. C., while engaged in organizing a third expedition.

DARIUS II., King of Persia, an illegitimate son of Artaxerxes I. He was surnamed Nothus and assumed the name of Darius. His reign was characterized by weakness and rebellions among his satraps. He ascended the throne in 423 and died in 404. He was succeeded by his son, Cyrus the Younger, who exercised much influence in the last years of the Peloponnesian War in Greece.

DARIUS III., surnamed Codomannus, the twelfth and last King of Persia. He was a great-grandson of Darius II. His reign began in 336 B. C. and ended with his death in 330. He became famous for his courageous spirit, handsome person, and general interest in his constituents. At the time he ascended the throne, his kingdom was greatly disturbed by the tyranny and luxury of his predecessors and was soon overwhelmed by the advancing opposition of the Macedonians. His army was defeated on the banks of the Granicus in Asia Minor. Soon after he organized an army of 400,000 to intercept the advance of Alexander the Great in the mountains of Cilicia, but was defeated a second time in the battle near the Issus, in 333 B. C., when his family fell into the hands of Alexander. He collected another army and met the Macedonians in 331 B. C., but was again defeated. Shortly after, Alexander captured Susa, the capital, and made all Persia subject to Greece. Darius was slain as the result of a conspiracy in 330 B. C., and with his death the Persian Empire came to a close. His daughter, Statira, became a wife of Alexander.

DARK AGES, the name applied to a portion of the Middle Ages, including a period of about a thousand years, from the fall of Rome to the revival of letters in the fifteenth century. The period properly commences with the invasion of France by Clovis in 486 A. D., and closes with the invasion of Naples by Charles VIII. in 1495.

DARLEY (där'lĭ), **Felix Octavius Carr,** artist, born in Philadelphia, Pa., June 23, 1822; died March 27, 1888. After securing a common school education, he clerked in a mercantile establishment in Philadelphia and began to produce humorous sketches and book illustrations. Among his productions are about 500 drawings for the works of Fenimore Cooper. He produced illustrations on stone for Irving's "Legend of Sleepy Hollow" and "Rip Van Winkle." A number of his drawings were reduced to appear on bank notes and government bonds. He resided in Europe from 1864 to 1868. After returning to America, he published "Illustrations to Evangeline," "Sketches Abroad with Pen and Pencil," "Outlines to the Scarlet Letter," and "Illustrations of Shakespeare's Plays."

DARLING (där'lĭng), a river in Australia, the largest tributary of the Murray. It is formed by the confluence of several rivers rising in the Liverpool Range, has a length of 600 miles, with its tributaries 1,150 miles, and drains an area of 197,500 square miles. Its confluence with the Murray is at Wentworth, on the boundary between Victoria and South Australia. The name is applied to two districts in Australia, the Darling District and the Darling Downs. The former is in New South Wales and the latter in Queensland.

DARLING, Grace Horsley, famous heroine, daughter of William Darling, keeper of the Longstone lighthouse, born at Bamborough, England, Nov. 24, 1815; died Oct. 20, 1842. A severe storm on Sept. 6, 1838, had wrecked the *Forfarshire* with fifty-three persons on board at Harker's Rock, among the Farne Islands, and was discovered from the lighthouse by Grace Darling. Through the heroic efforts of the maiden and her father nine persons were rescued and brought safely to shore. Many honors were accorded to her on account of this noble feat, besides which she received a purse of $3,500.

DARLING RANGE, a chain of mountains in the western part of Australia, extending parallel with the coast for a distance of nearly 300 miles. The highest summit, Point D'Entrecasteaux, has an altitude of 3,700 feet above the sea. The general altitude ranges from 1,200 to 1,500 feet, and many sections of this range are covered with fine forests.

DARMSTADT (därm'stät), a city of Germany, capital of the grand duchy of Hesse-Darmstadt, situated on the Darm River, fifteen miles south of Frankfort-on-Main. It is the converging center of several railroads and has a large jobbing trade. The streets are well paved with stone and macadam. Among the chief buildings are the palace of Prince Henry, the town hall, the Victoria School, and the Grand Ducal Palace. The last mentioned contains a museum of rare paintings and a library of 500,000 volumes. A fine Doric column rises to the height of 134 feet in one of the public squares, upon which is mounted a statue of the Grand Duke Louis, who founded the newer portion of the city and greatly extended its commercial importance. The manufactures include hats, carpets, chemicals, clothing, and earthenware. It has modern municipal facilities, such as gas and electric lighting, public waterworks, and electric street railways. Darmstadt has been the capital since 1567. Population, 1905, 83,123; in 1920, 87,085.

DARNLEY (därn'lĭ), **Henry Stuart, Lord,** public man, born in 1545; slain in Scotland, Feb. 9, 1567. He was the son of the Earl of Lennox, educated in England, and married Mary, Queen of Scots, in 1565. The marriage proved a very unfortunate one on account of which he is chiefly known. After the birth of his son, who subsequently became James I. of England and VI. of Scotland, he was stricken with smallpox at Glasgow, and later was conveyed to an isolated house by Mary, where he was confined for some time. The dwelling belonged to Bothwell, who afterward married Mary, and was blown into the air by powder, killing Darnley and several others. It is thought that Bothwell was concerned in the crime.

DARRAH, Mrs. Lydia, heroine, celebrated in the history of the American Revolution. Little is known of her early life, aside from the fact that she was a Quaker and resided in Philadelphia, Pa. The adjutant general of the British army rented one of the rooms in the house where she and her husband resided at the time it held possession of Philadelphia, and it was planned to attack the American army under Washington, then at White Marsh, on Dec. 4, 1777. She had obtained information of the intended attack, procured a permit from Gen. Howe to pass the British lines with the understanding that she wanted to get some flour for her family, but at night walked several miles in the snow to inform Col. Craig of the plans of the British. She returned at night without any one knowing of her mission. When the British moved against Washington they found him ready to meet them, hence the attack proved a failure.

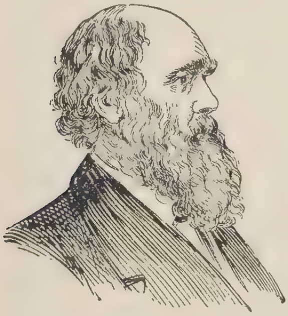
DARTER (därt'ẽr), the name of a group of small fishes found in the fresh waters of North America, so named from their quick motion. These fish belong to the perch family, are from six to ten inches long, and are classed among the smallest spiny rayed fish. They frequently lie concealed under stones at the bottom of clear running water, and when hungry or frightened dart suddenly for a short distance. Several species are familiar, most of them frequenting the streams of the central and southern parts of the United States.

DARTER, or **Snakebird,** a bird native to the tropical parts of most continents, closely allied to the cormorant. The feet are webbed, the bill is longer than the head, and the neck is long and slender. They are called darter from their quick motion. The name *snakebird* is applied to them from the fact that the head is scarcely thicker than the neck, giving that part of the body the appearance of a snake. When frightened while sitting on a branch over a stream, they dart quickly into the water or fly upward and circle in the air like a hawk. They are skilled in catching fish, at which they dart with a sudden and well-directed aim. The American darter is sometimes called water turkey and is about three feet long.

DARTMOOR (därt'mōōr), an extensive and desolate upland in Devonshire, England, belonging to the duchy of Cornwall. It is noted because of its rugged scenery and as the source of several rivers. A large portion of it furnishes grazing for cattle and sheep during the summer months. The extent is fourteen miles from east to west and twenty miles from north to south, with an area of 150,000 acres. The minerals include China clay and tin. At Lee Moor, which is the seat of a meteorological observatory, are the largest kaolin works in England. A number of earthworks, Cyclopean bridges, and stone antiquities abound. A prison was built on the Dartmoor upland in 1809 for the custody of French prisoners of war. The British impressed about 2,500 American sailors during the War of 1812, confining them in this prison until peace was concluded. The prison incloses about thirty acres and is now used as a depot for convicts.

DARTMOUTH COLLEGE (därt'mŭth), an institution of higher learning at Hanover, N. H. It is the outgrowth of a school which was established at Lebanon, Conn., in 1754, for the Christian education of Indian youth. This school was founded by Eleazer Wheelock and was known as Moor's Indian Charity School, so named from Josiah Moor, who contributed a house and two acres of land. The college received a royal charter in 1769, hence is one of the oldest of New England colleges, ranking next to Harvard and Yale. John Wentworth, the governor of the Province of New Hampshire, gave to the college the name of Lord Dartmouth, who was its most active patron in Great Britain, but he and other Englishmen who contributed to its support withdrew their patronage soon after it ceased to be devoted particularly to the education of Indians. It is at present one of the foremost institutions of higher learning in New England. Though surrounded by religious influences, it is nonsectarian, but it remains an institution for men only. The departments include those of medicine, classics, sciences, commerce and finance, and civil engineering. It has a library of about 200,000 volumes and 20,000 pamphlets. With it are associated the Dartmouth Medical School, founded in 1798; the Thayer School of Civil Engineering, founded in 1867; and the Amos Tuck School of Administration and Finance, established in 1900. In 1925 the enrollment in all the departments of the college was reported at 1,550, drawn from thirty-five states. The State of New Hampshire attempted to gain control of the college in 1860, which gave rise to a famous case in the lower courts and the Supreme Court of the United States. See **Dartmouth College vs. Woodward.**

DARTMOUTH COLLEGE VS. WOODWARD, a case decided by the Supreme Court of the United States in 1819. It grew out of a controversy between the trustees of Dartmouth College and the Legislature of New Hampshire. George III. granted a charter to found Dartmouth College in 1769, and after the Revolution the State of New Hampshire claimed the same control as was exercised by the throne prior to the independence of the United States. William Woodward held the offices of secretary and treasurer of the corporation of Dartmouth College under the trustees of the college, twelve in number, and a controversy arose between him and the trustees, who removed him from office. In the meantime the State Legislature passed an act to amend the charter so as to supervise the affairs of the college under a new board of twenty-one members. This board appointed William Woodward secretary and treasurer, and the old trustees brought a suit against him to recover the property of the college. A verdict for the defendant was given in the superior court of New Hampshire, but this was reversed on appeal in the United States Supreme Court and the plaintiffs were awarded $20,000 damages. The essence of the decision is that the "charter of Dartmouth College is a contract within the meaning of that clause of the Constitution which prohibits the states from passing any law impairing the obligation of contracts." This decision was handed down by Chief Justice Marshall. The plaintiffs were represented by Daniel Webster.


CHARLES R. DARWIN.

DARWIN (där'win), **Charles Robert**, noted naturalist, son of Dr. R. W. Darwin, born at Shrewsbury, England, Feb. 12, 1809; died April 19, 1882. He was a grandson of Erasmus Darwin, a naturalist, and developed an early interest in the natural sciences. In 1825 he entered Edinburgh University, where he attended two years, and in 1831 received a degree at Cambridge. Soon after graduating he was appointed for a hydrographical survey in the South American waters. He sailed on the steamer *Beagle* and spent five years in studying the flora, fauna, and life conditions of many temperate, subtropical, and tropical plants, on account of which he became well equipped for the higher work in which he afterward engaged. In 1838 he was appointed secretary of the Geological Society and the next year was elected to the Royal Society. In the meantime he married his cousin, Miss Wedgwood. While on his voyage of investigation, he kept a careful account of observations and published them in the "Journal of Researches." About the same time he published "Zoölogy of the Voyage of the *Beagle* from 1840 to 1843." He settled in Down, Kent, three years after his marriage and devoted himself to the pursuit of scientific study. His work entitled the "Origin of Species by Means of Natural Selection" was published in 1859. In this treatise he attempted to prove that all the forms of plant and animal life are evolved from other species, and that the evolution is due to natural selection, in which the fittest survive in the struggle for existence.

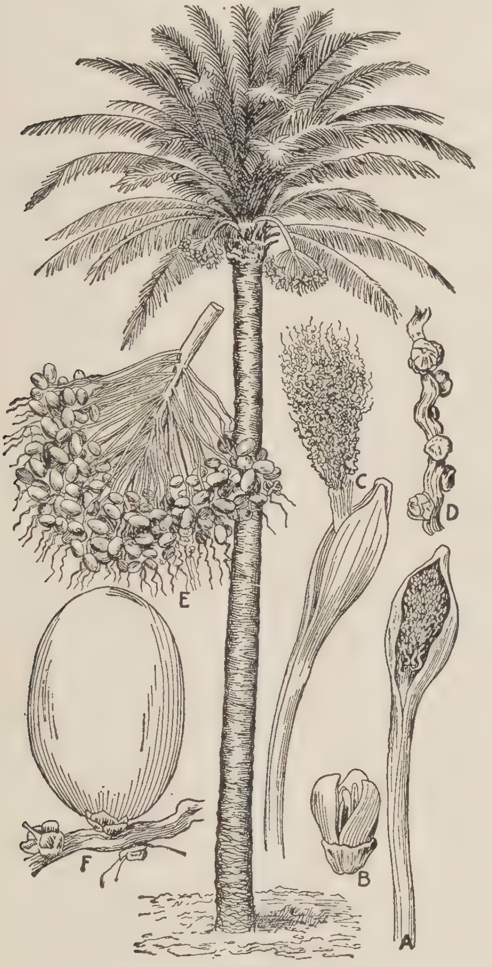
Evolution had been advocated prior to the time of Darwin, but his theories are the first to be discussed in a general way and to arouse widespread and profound consideration. The discussion was often attended by bitter theological and scientific warfare, though his writings are entirely free from personal elements. Darwin was noted for his purpose of honesty, affable character, devotion to his conception of truth, and persistent habits of study. While he is not the originator of the hypothesis of evolution, he is regarded the leading advocate of this theory and directed the most earnest attention to that dogma. Among his writings, besides those named above, are "The Structure and Distribution of Coral Reefs," "The Descent of Man and Selection in Relation to Sex," "Geological Observation in South America," "Fertilization of Orchids," "Insectivorous Plants," "Cross and Self Fertilization in the Vegetable Kingdom," "Formation of Vegetable Mold," "Emotions in Man and Animals," "Principles of Variation Under Domestication," and "The Power of Movement in Plants."

DARWINISM, a term used to designate the views advocated by Charles R. Darwin, relating to the origin of species of plants and animals The view that all things are susceptible to change by cultivation was held by a vast majority of naturalists before the publications of Darwin became known. It had been demonstrated that hybrids might originate from various species, but writers deemed the hybrids sterile and regarded any further change impossible. The views of Darwin were held by Alfred Russel Wallace and were foreshadowed by Aristotle. The theory of transmutation of species stands in direct opposition to the belief that each species was originally created as a separate type. It embraces the proposition that in every plant or animal exists a certain amount of variability. The offspring differ in some respects from each other and from the parent stock, this becoming aggravated by climatic conditions and environments through long periods of time, as is noticed by the domestication of animals. There is a tendency on the part of each animal and plant to multiply at a geometrical ratio, and, if a single one were not checked, it would in the course of ages fill the earth. On account of this there is a severe struggle for existence, in which all forms of life engage against other forms, and especially against their own kind.

According to this view, the types best adapted for the struggle of life survive, while others die by suppression and defeat. Those which endure are said to do so from *natural selection.* As the offspring of each class of animals and plants resemble the parent stock in most respects, the less improved forms ultimately become exterminated, and each family is continued by the *representative* individual which it embraces. The result of this, and of sexual preference, leads to an endless progression by which evolve higher species, genera, families, orders, classes, and even subkingdoms. The theory may be illustrated by the claim that neither a horse nor an ox existed at a remote time in the past, but there was an animal that had the characteristics common to both. The various changes gave rise to specialized forms, until finally the horse came forth from an ancestor not so specialized as itself, and the ox from another. The theory, more briefly stated, is that the "Creator may have breathed life into one or more forms of life, from which the others originated."

DASYURE (dăs'ĭ-ūr), the common name of a genus of marsupial animals native to Australia and Tasmania. They are allied to the opossums. Most species are spotted and have bushy tails. The dasyure of Tasmania is light brown or whitish beneath, gray and whitish above, and about two feet long. It lives in burrows, feeds on insects and flesh, and is particularly fond of poultry. Several species of Australia resemble the cat and are quite strong and fierce. Fossil remains of the dasyure are found in many sections of South America.

DATE, the common name of the fruit borne by a number of species of trees which belong to the genus *Phoenix dactylifera*. The tree itself is known as the date tree or date palm. It is the palm tree mentioned by classic writers and in the Scriptures. Its nativity is in India, Southwestern Asia, and Northern Africa, where it still flourishes, serving a useful purpose in the domestic and commercial life of the inhabitants. The trees have a straight stem, from twenty-five to sixty feet in height, and are of nearly the same thickness throughout the entire length. Date palms are divided into male and female, the former usually numbering about one in twenty-five when found in palm groves. The pistillate trees bear from 150 to 200 dates. In the larger species the bunches of dates weigh from twenty to twenty-five pounds, hanging below the leaves, at the top of the tree. The Arabs are among the most extensive producers, propagating them from suckers. In the eighth year they begin to bear. They reach maturity at about twenty-five and decline after growing fully a hundred years.



DATE.

A, Male flower cluster; *B*, male flower; *C*, female flower cluster; *D*, female flower; *E*, fruit; *F*, single date.

The fruit of the date tree is eaten fresh or is preserved by drying. Large cakes are made of dates by pounding and kneading them together, and these form the principal food of the Arabian caravans that traverse the deserts. Some species are used in the manufacture of wine and a sort of vinegar. The date stones or seeds are ground and fed to camels, or are used as a substitute for coffee. A valuable oil is obtained from the seeds, while in some countries they are used in making ornaments and charms. Baskets, bags, and pouches are made from the leaves, while the fibers found near the bottom of the tree are used for making ropes, and the wood is valuable for fencing and building purposes. The fruit of several species native to Asia is used in the manufacture of toddy, which forms a pleasant drink. The date palm, next to the cocoanut tree, is the most interesting and useful of the palms.

DATE PLUM, the name of several species of trees of the ebony family, usually large, thick-leaved, and hard-wooded. The low-growing date plum tree of Europe produces a small fruit. It is native to the southern portion of that continent. The American persimmon or date plum attains a height of from forty to sixty feet. Its fruit is about an inch in diameter, nearly round, very hard, and eatable after being frosted. The date plum of China is cultivated for its fruit, which resembles a small apple in size, and is useful in making preserves.

DAUBIGNY (dō-bẽn-yẽ′), **Charles François,** landscape painter, born in Paris, France, Feb. 15, 1817; died Feb. 19, 1878. He studied under Paul Delaroche and began to exhibit in the Salon at an early age. In 1857 he was made chevalier of the Legion of Honor, in which he became an officer in 1874. His paintings are very numerous and are praised for their fine effect of light and shade. They include "On the River Oise," "The Valley of Optevoz," "The Apple Orchard," "Beech at Villerville," and "The Sheepfold."

DAUDET (dō-då′), **Alphonse,** dramatist and novelist, born in Nimes, France, May 13, 1840; died Dec. 16, 1897. He was educated at the Lyons Lycee. When seventeen years of age, he went to Paris, where he became an appointee in the office of the Count of Morny, then president of the legislative corps. His first book, a work on poetry, was published in 1858, by which he gained a wide reputation, and was soon after employed as a writer on several newspapers. Among his best known works are "Tartarin of Tarascon," "Jack," "Sappho," "Immortal," "The Sacrifice," and "Robert Helmont."

DAUGHERTY, Harry Kerr, public man, born in Mercer County, Penn., Dec. 28, 1868. He studied at Grove City College, was admitted to the bar, and served in the Spanish-American War. For several years after the war he was engaged as attorney in behalf of claims before the Spanish treaty claims commission. He was arbitrator in several noted controversies, including one between the Nickel Plate Railway and the New York Central Railway. He held various offices in Pennsylvania and in 1926 became assistant solicitor of the U. S. Treasury.

DAUGHTERS OF THE AMERICAN REVOLUTION, a woman's society of the descendants of the soldiers and sailors of the Revolution, organized at Washington, D. C., on Oct. 11, 1890. The purpose is to perpetuate the memory of those who fought upon the American side in the War of Independence, to promote the erection of monuments, and to encourage the collection of relics. A site was purchased in Washington, D. C., in 1902 for the purpose of erecting in that city a memorial hall.

DAUPHIN (da̤′fĭn), the eldest son of a French king, prior to the revolution of 1830. The title was originally held by the lords of Viennois, whose province was called Dauphiné. It was first assumed about the middle of the ninth century. The last lord ceded the province to the French king in 1349, on the condition that the title should be forever borne by the heir apparent. The wife of a dauphin was called a dauphine or dauphiness.

DAVENPORT (dăv′ḙn-pōrt), a city in Iowa, county seat of Scott County, on the Mississippi River and on the Chicago, Burlington and Quincy, the Chicago, Rock Island and Pacific, the Chicago, Milwaukee and Saint Paul, and other railroads. Across the Mississippi is Rock Island, Ill., with which it is connected by a number of bridges. The public buildings include the county courthouse, a Federal building, the city hall, the public library, Mercy and Davenport hospitals, Saint Ambrose College, the Masonic Temple, and Griswold College, a Protestant Episcopal institution founded in 1859. It has a number of fine public schools and churches, a State orphan home, and the Palmer School of Chiropractic. Rock Island, opposite the city, is a beautiful island several miles long. It is owned by the United States government, and is the seat of an arsenal and of military headquarters.

Davenport is important as a commercial center. It has regular steamship communication with ports on the Ohio and the Gulf. Among the manufactures are clothing, furniture, flour, railroad cars, farming implements, buttons, pottery, and woolen goods. It has large interests in shipping grain and in slaughtering. The streets are generally well improved by grading and paving. Among the public utilities are waterworks, sewerage, electric lighting, and electric street and interurban railways. It was settled in 1854 and named after Colonel Geo. Davenport. In 1838 it was incorporated as a town and in 1851 as a city. Population, 1905, 39,797; in 1925, 52,469.

DAVENPORT, Edward Loomis, actor, born in Boston, Mass., Nov. 15, 1814; died Sept. 1, 1877. After securing an education, he took training for both tragedy and comedy. While popular in America and Europe, he was less accomplished than his daughter, Fanny. He married Fanny Vining, an English actress, in 1849, and was accompanied by her in his starring engagements. His plays were mostly Shakespearean, but he appeared in others and in several of his own authorship.

DAVENPORT, Fanny Lily Gipsy, actress, born in London, England, April 10, 1850; died in Duxbury, Mass., Sept. 26, 1898. She was the daughter of the well-known actor, Edward L. Davenport, and entered upon the stage at the early age of fourteen years, after attending the public schools in Boston. She achieved much success under Austin Daly and ranked among the foremost actresses in high comedy. Besides appearing in Shakespearean comedies, she acted in emotional plays, among them "Theodora," "Cleopatra," "Fedora," and "Camille." In 1879 she married Edwin F. Pierce, but was divorced from him, and soon after married Melbourne MacDowell. While her art was high, the success achieved was due partly to her personal attraction.

DAVID (dā′vĭd), "the beloved," second King of Israel, known and venerated by Christians, Jews, and Mohammedans. His birth is assigned by some writers to 1085 B. C. and his death to 1015. He was the youngest son of Jesse, a citizen of Bethlehem, and descended from the princes of Judah. His life is recorded in the two books of Samuel and in the first book of Chronicles. A portion of the book of Psalms is attributed to his authorship, containing frequent allusions to incidents of his life. He became distinguished by slaying Goliath, the giant of the Philistines, and on account of this heroic deed and his skill with the harp he was taken to the court of Saul and given a military command. The jealousy of the king compelled him to seek safety in the cave of Adullam, near Gath, where he gathered a band of adherents and arranged to attack the enemies of his country and the king. Later he became vassal to the Philistine King of Gath, and, subsequent to the death of Saul and Jonathan, he reigned seven years in Hebron over the tribe of Judah. After the death of Ishbosheth, the son and successor of Saul, he was chosen King of Israel. Conquering the independent city of Jebus, he made it the seat of government and named it Jerusalem.

Few rulers accomplished more than David, even in the most civilized times. By a system of internal development the kingdom was solidified and public improvements were constructed in all important places. At his own capital he built a palace for himself and securely protected the ark of the covenant. Later he reduced by conquest the lands of the Philistines, Edomites, Aramaeans, and Ammonites, and extended his dominion from the Euphrates to Egypt. His reign included the period from 1047 B. C. to 1015, though some writers assign his government to a later date. In the last year before his death two rebellions occurred under his sons Absalom and Adonijah. The former was slain by Joab and the latter was baffled by Solomon. The Israelites attained their greatest power in the reign of David, which has always been regarded the golden age of Jewish history. Besides a courageous and prudent ruler, he was a lyric poet and became known as "the sweet singer of Israel."

DAVID (då-vēd′), **Jacques Louis,** painter, born in Paris, France, Aug. 31, 1748; died Dec. 29, 1825. He studied at Paris and Rome and visited many of the European centers of art. His works include many productions in the classic styles. In the Revolution he became prominent in politics, and as a member of the convention voted for the death of Louis XVI. Being a Jacobin and a member of the Committee of Safety, he was twice imprisoned after the fall of Robespierre. Napoleon appointed him first painter in 1804 and gave him a number of commissions. After the fall of Napoleon, to whom he was greatly attached, he was banished and died in exile in Brussels. His greatest work undoubtedly is "The Rape of The Sabines." Other productions include "The Death of Socrates," "The Oath of Horatio," "Paris and Helen," "Brutus Condemning his Son," "The Wrath of Achilles," and "Mars Disarmed by Venus."

DAVID, Pierre Jean, sculptor, born at Angers, France, Mar. 13, 1789; died Jan. 5, 1856. He is generally known as David d'Angers. After studying sculpture in Paris, he spent some time in Rome in company with Canova and Thorwaldsen, and in 1816 returned to France. He acquired a high reputation by producing the statue of the Prince of Condé, and in 1826 was made a member of the Institute. Shortly after the revolution of 1830 he began work on the Pantheon, the pediment of which he filled with sculptures. He made statues of Cuvier and Racine, medallions of Napoleon and Mme. David, and busts of Goethe and Washington, and produced many portraits in bas-relief. In 1848 he was elected a republican member of the national assembly.

DAVIDSON (dăv′ĭd-s'n), **John,** poet, born in Barrhead, Scotland, April 11, 1857. He worked in the chemical department of a sugar refinery when thirteen years of age, subsequently attended Edinburgh University, and was teacher in the schools of Scotland for several years. In 1890 he began a literary career in London by contributing to periodicals and preparing material for books. Among a number of plays worthy of notice is "A Tragic Farce." He gave considerable attention to the publication of pamphlets dealing with public questions, which he published under the general title of *Testaments.* They include the "Vivisector" and "An Empire-Builder." His better known publications include "The Last Ballad and Other Poems," "The Making of a Poet," "New Ballads," and"Fleet Street Eclogue." He died in April, 1909.

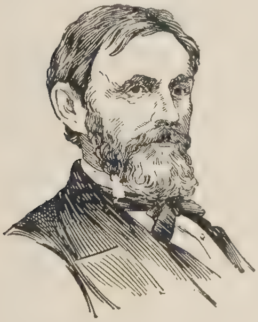
DAVIES (dā′vēz), **Sir Louis Henry,** jurist, born at Charlottetown, Prince Edward's Island, May 4, 1845; died May 1, 1924. He studied at Prince of Wales College, Charlottetown, was admitted to the bar in 1866, and became solicitor-general in 1869. In 1876-79 he was premier and attorney-general of Prince Edward's Island, and was elected to the Parliament of Canada as a Liberal in 1882, serving continuously about twenty-five years. In 1898 he was one of the joint high commissioners on the part of Great Britain to settle all differences with the United States in respect to Canada. He was made Minister of Marine Fisheries for Canada in 1896, serving until 1901, and was appointed one of the judges of the Supreme Court of Canada.

DAVIS (dā′vĭs), **Cushman Kellogg,** statesman, born at Henderson, N. Y., June 16, 1838; died Nov. 27, 1900. He graduated at the University of Michigan in 1857 and began the practice of law, but entered the Union Army as a private at the beginning of the Civil War. After two years he left the service and settled in Saint Paul, Minn., where he built up a successful law practice. He was elected Governor of that State in 1874, became a member of the United States Senate in 1887, and served as Senator until his death. He took rank with the foremost statesmen of the Republican party and succeeded John Sherman as chairman of the Committee of Foreign Relations. At the close of the Spanish-American War he was one of the peace commissioners who concluded the Treaty of Paris.

DAVIS, David, statesman and jurist, born in Cecil County, Maryland, March 9, 1815; died June 26, 1886. After receiving a common school education, he graduated from Kenyon College, Gambier, Ohio, studied law, and began a successful practice at Bloomington, Ill. He was elected to the Legislature in 1844, served as judge of the circuit court three terms, and was appointed by President Lincoln as judge of the United States Supreme Court. He was executor of Lincoln's estate. The National Labor Reform party nominated him for President in 1872. In 1877 he left the supreme bench to succeed John A. Logan in the United States

Senate, and became president of that body after the death of President Garfield. He resigned his seat in 1883. Though an independent in politics, he usually voted with the Democrats.

DAVIS, Henry Winter, statesman, born in Annapolis, Md., Aug. 16, 1817; died Dec. 30, 1865. He graduated at Kenyon College, Ohio, studied law at the University of Virginia, and practiced as a lawyer in Baltimore. In 1854 he was elected to Congress, serving until 1861, and was again a member of Congress in 1863-65. He was first a Whig, then supported the American party, and finally became a Republican. During the war he favored the Union and advocated the abolition of slavery. He was chairman of the Committee on Foreign Affairs from 1863 until 1865.



JEFFERSON DAVIS.

DAVIS, Jefferson, statesman and President of the Confederate States of America, born in Todd (formerly Christian) County, Kentucky, June 3, 1808; died Dec. 6, 1889. He studied at Transylvania College, Kentucky, and was appointed cadet at West Point by President Monroe in 1824, where he studied four years. After graduation, he held a commission for seven years as lieutenant, and rendered valuable support in the Black Hawk War. He resigned from the military service and married a daughter of General Taylor, after which he settled as a cotton planter near Vicksburg, Miss. He was elected as a Democrat in 1844 to serve in the electoral college that balloted on Polk for the Presidency. In 1845 he became a representative of his district in Congress, but resigned his seat the following year on account of the Mexican War, having been chosen colonel of a Mississippi regiment of volunteers. He served with gallantry in the battles of Monterey and Buena Vista, but was wounded in the latter. He returned home at the close of the war, and was at once appointed to fill a vacancy in the United States Senate, which was soon after approved by the Legislature and, in addition, he was named for a full term. Franklin Pierce appointed him Secretary of War in 1853, and in 1857 he was again elected to the Senate, becoming at once the leader of the Democratic party. He resigned his seat in the Senate when Mississippi seceded from the Union, on Jan. 9, 1861, and was given command of the military forces of his State.

When the Confederate States organized an independent government, on Feb. 18, 1861, Jefferson Davis was appointed President by the provisional convention at Montgomery, Ala. He promptly formed a Cabinet and issued a message, in which he commended the attack on Fort Sumter and deprecated President Lincoln's call for volunteers, stating "all we ask is to be let alone." The history of Davis's Presidency is the story of the war. The contest began shortly after he assumed office and closed immediately after he left Richmond. He was elected President for a term of six years on Feb. 22, 1862. Throughout the terrible struggle his was the guiding hand, and upon his careful administration depended the intensity of the contest. In a message dated March 13, 1865, he confessed that the situation had grown grave, but he still held out hope that there were ample means for securing a successful termination. Twenty days after issuing this message he left Richmond, and Lee surrendered to Grant April 9, 1865. Davis proceeded to Danville and later to Greensboro, N. C., where he met Generals Johnston and Beauregard in a conference, and soon after left for Charlotte. He was captured by a company of Union soldiers under Colonel Prichard at Irwinville, Ga., on May 10, while attempting to escape arrest. Subsequently he was confined at Fortress Monroe for two years, during which time the authorities at Washington were deciding what should be done with him, and in 1866 he was indicted for treason. He was admitted to bail on March 3, 1867, but was never brought to trial. The general amnesty issued in December, 1868, included him, but he refused to take the necessary steps to have his political disabilities removed. Later he declared himself still in favor of states' rights and that he would not accept the situation. Davis was a forceful speaker, possessing exceptional executive ability and force of character. He spent the last ten years of his life in Beauvoir, near Biloxi, Miss., and prepared a work in two volumes, entitled "The Rise and Fall of the Confederate Government." His remains were buried at New Orleans, but were removed to Richmond, Va., in 1893, where a fine monument was erected to his memory.

DAVIS, John Chandler Bancroft, jurist and diplomat, born in Worcester, Mass., Dec. 29, 1822. In 1840 he graduated at Harvard and studied law, and three years later began to practice the profession. He entered the diplomatic service as secretary of legation at London in 1849, and in 1869 was elected to the State Legislature of New York. President Grant appointed him Assistant Secretary of State. He represented the United States government in the arbitration of the Alabama Claims at Geneva, Switzerland, in 1871, and resumed the position of Assistant Secretary of State after his return to America. From 1874 to 1877 he was minister to Germany, later became a judge of the court of claims, and was made reporter of the Supreme Court in 1883. Among his books are "The Massachusetts Justice," "Arbitration at Geneva," and "Treaties of the United States." He died in 1907.

DAVIS, James J., public man, born at Tredegar, Wales, Oct. 27, 1873. He came to Pittsburgh, Pa., in 1878. In 1921 he entered the cabinet of President Harding as Secretary of Labor. President Hoover retained him in the cabinet for the same office.

DAVIS, John William, public man, born at Clarksburg, W. Va., April 13, 1873. He was admitted to the bar in 1895, became a teacher of law in Washington and Lee University, and practiced law successfully at Clarksburg from 1897 to 1913, when he removed his law practice to New York City. From 1911 until 1915 he served as a member of Congress, representing the 1st district of West Virginia, and in 1918 became solicitor-general of the United States. In the same year he was made ambassador to Great Britain, succeeding Walter Hines Page.

Davis ranks among the progressive Democrats. He was prominent throughout the administration of President Wilson and served on many delegations and in numerous conferences in Europe. In 1924 he was nominated for President by the Democrats on the 103d ballot, but was defeated in the election.

DAVIS, Nathan Smith, author and physician, born in Greene, N. Y., Jan. 9, 1817; died in 1904. Among his works are "Remedial Value and Proper Use of Alcoholic Drinks," "Clinical Lectures," "Essay on the Philosophy of Medicine," and "A History of Medical Education and Institutions of the United States."

DAVIS, Rebecca Harding, novelist, born in Washington, Pa., June 24, 1831; died Sept. 29, 1910. Among her publications are "A Law unto Herself," "Waiting for the Verdict," "Bits of Gossip," "Kitty's Choice," and "Silhouettes of American Life."

DAVIS, Richard Harding, novelist and journalist, son of Rebecca Harding Davis, born in Philadelphia, Pa., April 18, 1864. His books include "Stories for Boys," "Van Bibber and Others," "Our English Cousins," "The Princess Aline," "Soldiers of Fortune," "The West from a Car Window," "Cuban and Porto Rican Campaigns," "With Both Armies in South Africa," "The Bar Sinister," and "Kits and Outfits." He died April 11, 1916.

DAVIS, Varina Anne, the "Daughter of the Confederacy," born at Richmond, Va., in June, 1864; died Sept. 18, 1898. She was the daughter of Jefferson Davis and was born while he was in the State house of the Confederacy. After receiving an education, she developed more than ordinary ability as a painter, musician, and writer.

DAVIS STRAIT, the portion of the sea which separates Baffin Land from Greenland and connects Baffin Bay with the Atlantic Ocean. The width is from 180 to 500 miles. It is valued for its whale fisheries. An Arctic current flows southward through this strait and passes along the Atlantic coast of America. It is thought to be the Ginnunga Gap spoken of in the Norse Sagas.

DAVITT (dăv'ĭt), **Michael,** public man, born in Straide, Ireland, March 25, 1846; died May 31, 1906. His parents were tenants and were evicted from their farm in 1850 on account of poverty. He was a factory hand in the cotton mills at Haslingden, where he lost his right arm, and at the age of fifteen engaged to work in a printing office. In 1867 he joined the revolution that sought to free his country from England, and was sentenced to fifteen years' imprisonment for transporting arms into Ireland, but was released in 1875. He made a lecturing tour of the United States to raise funds with which to liberate Ireland from landlordism, and in 1879 organized the Irish Land League. The following year he was arrested under the Coercion Act and kept in prison fifteen months, after which he was released and in 1882 elected to Parliament, but was not allowed to serve. In 1893 he was again elected to Parliament but was compelled to vacate on account of bankruptcy, and was again elected in 1895 and served until his resignation in 1899. He published many works of public interest and was an opponent of Parnell, although in sentiment a strong advocate of home rule. His publications include "Impression of Australasian Democracy," "Defenses of the Land League," and "Leaves from a Prison Diary."

DAVY (dā'vĭ), **Sir Humphry,** famous chemist, born in Cornwall, England, Dec. 17, 1778; died on May 29, 1829. He attended school at Truro until fifteen years of age, studied chemistry, and later became an assistant in the Pneumatic Institution at Clifton. Classic learning and poetry were his favorite studies, and his retentive memory made him an interesting and versatile story-teller. His experiments, of which he made many, were largely in gases, in which he almost sacrificed his life many times. Accounts of his researches established a reputation that led to his appointment as a lecturer to the Royal Institution of London, where his ability and remarkable experiments attracted much attention and large audiences. He began researches in agriculture in 1803, and made them the basis of a systematic lecture course. Soon after he discovered that alkalis and earths are compounds formed by a union of oxygen with metallic bases.

Davy first succeeded in decomposing potash in 1807, and was so much delighted with his success that he was overcome with enthusiasm. Later he decomposed alkaline earths, soda, lime, magnesia, and other substances, and discovered sodium, calcium, magnesium, and barium. In 1812 he was knighted and soon after entered upon an expedition to investigate the theory of volcanic action. He returned to England in 1815 and later investigated the nature of fire damps, the explosions of which had caused much damage in mines. From these investigations he was enabled to invent a safety lamp. On account of this he was granted a baronetcy and later became president of the Royal Society. His attention was next directed to the preserving of the copper sheathing of vessels from corrosion by the action of sea water, which led to no definite results. Among his numerous writings are "Elements of Agricultural Chemistry," "Chemical Agencies of Electricity," "Elements of Chemical Philosophy," and "Last Days of a Philosopher."

DAWES, Charles Gates, public man, born in Marietta, Ohio, Aug. 27, 1865. He studied in his native city, was admitted to the bar, and practiced law seven years at Lincoln, Nebr. Subsequently he removed to Chicago, where he engaged in business and politics. In 1896 he was the campaign manager for McKinley, who made him controller of the currency at Washington. He served on the purchasing board during the World War, was director of the Federal budget system, and was head of the commission which devised the Dawes Plan. In 1924 he was elected to the office of Vice-President. President Hoover, in 1929, appointed him ambassador to England.

DAWES (dạz), **Henry Laurens**, statesman, born in Cummington, Mass., Oct. 30, 1816; died in 1903. He served as a member of Congress from 1857 to 1873, and in the United States Senate from 1875 to 1893, where he was influential and useful.

DAWSON (dạ'sŭn), a river port of Canada, capital of Yukon, on the Yukon River. It is finely situated at the confluence of the Klondike and Yukon rivers, about 330 miles northwest of Skagway, on an elevation 1,450 feet above the sea. The surrounding country is a gold-mining region. Its importance dates from 1896, when gold was discovered on Bonanza Creek. The chief buildings include a number of schools and churches, several theaters, a public library, and the buildings occupied by government officials. It is connected with the coast by telegraph lines and has local telephone service. Transportation is chiefly by steamers on the lower and upper Yukon. It was so named from George Mercer Dawson, a noted geologist of Canada. Population, 1901, 9,142; in 1921, 3,213.

DAWSON, George Mercer, scientist, son of J. W. Dawson, born at Pictou, Nova Scotia, Aug. 1, 1849; died March 2, 1901. He was educated at McGill University and the Royal School of Mines, London, where he distinguished himself as a student of marked ability. In 1873 he was appointed geologist and naturalist to the British North American boundary commission, and as a result published a report entitled "Geology and Researches of the Forty-ninth Parallel." Later he traveled extensively in Europe inspecting mines, museums, and metallurgical works, and was made leader of the Yukon expedition in 1887. In 1891 he served with Sir George Baden-Powell as British Bering Sea commissioner. The Geological Society of London awarded him the Bigsby medal in 1891, and he was shown distinguished honors by numerous institutions, including the honorary degree of McGill University and of Queen's University. Among his later writings are contributions to the *Quarterly Journal* of the Geological Society of London, to the *Canadian Naturalist*, and to "Transactions of the Royal Society of Canada."

DAWSON, Sir J. William, geologist, born in Pictou, Nova Scotia, Oct. 13, 1820; died in Montreal, Nov. 8, 1899. His education was secured at Pictou College and Edinburgh University, where his efforts were marked by much interest in scientific studies. He devoted some time to studying the fossil plants and the Nova Scotia formation, and contributed numerous papers on coal measures and other interesting subjects to magazines and periodicals. In 1820 he was made superintendent of education for Nova Scotia and became associated with Charles Lyell as a contributor to the transactions of learned societies, thereby winning distinction at home and abroad. In 1855 he was appointed principal of McGill University and professor of natural sciences, which positions he held until 1893. His close insight into educational affairs led to the establishment of the McGill Normal School for the training of teachers. He was knighted in 1884, received the Lyell medal of the Geological Society of London, and became first president of the Royal Society of Canada. Among his contributions to the literature of geology are "The Dawn of Life," "Science and the Bible," "The Story of the Earth and Man," "Geological History of Plants," "Fossil Men and their Modern Representatives," "The Origin of the World," "Chain of Life in Geological Time," "Hand Book of Geology," and "Modern Ideas of Evolution." The last mentioned is a highly valuable work in opposition to the theories of Darwin.

DAY, the term employed originally to distinguish the time of daylight from the space of night or darkness, but now used more frequently to denote the complete alternation of light and darkness caused by an entire rotation of the earth upon its axis. Only one-half of the earth can be in the light of the sun at once, owing to its being a sphere. Night is merely the shadow of the earth, the two, day and night, covering equal portions of the earth's surface, and together constituting twenty-four hours. The alternations of light and darkness are caused by the rotation of the earth upon its axis, and, on account of it, the several portions of the surface have each a proportional share of light and darkness. The length of each varies at different seasons of the year, owing to the continual parallelism of the axis of the earth to any former position. The fact that different portions of the earth's surface are being turned consecutively toward the sun constitutes the cause of both the change of seasons and the variations of the length of day and night.

A *solar day* is measured from the sun's coming to the meridian and again returning to it. Owing to the revolution of the earth around the sun, the solar day varies in length. It is about four minutes longer than the *sidereal day*. The latter is measured by the time of a star's coming to the meridian and returning to it on the immediate subsequent night. The mean solar day is twenty-four hours, and the mean sidereal day is twenty-three hours, fifty-six minutes and 4.098 seconds. This difference is due to the sun's apparent movement at a slow rate to the east through the stars, by which they reach the meridian in a shorter time than the sun does, if estimated by sun time. The interval existing between two successive transits of the sun across the meridian is called an *apparent day*, while the *astronomical day* is a day beginning, since January, 1885, at noon and extending to the next. It is divided into twenty-four hours, not into two periods of twelve hours each. The day at the Equator is always twelve hours, while the longest day at the poles is six months. On the 21st of March and the 21st of September the days and nights are equal in all parts of the earth.

In different countries the day is counted to begin at different times. The Jews began the day at sunset and the Babylonians at sunrise; while the Egyptians and Romans counted from midnight, which is the basis used by most modern peoples. The Latin *post meridiem*, meaning afternoon, is abbreviated by writing P. M.; and *ante meridiem* (forenoon), by writing A. M. These are necessary on account of dividing the common clock time, or day, into two portions of twelve hours each.

DAY, William Rufus, statesman, born in Ravenna, Ohio, April 17, 1849; died July 9, 1923. He attended the University of Michigan, from which he graduated in 1870, and, after studying law, was admitted to the bar in Ohio. In 1886 he was elected judge of the court of common pleas as a non-partisan. He succeeded John Sherman as Secretary of State in 1898, having previously served as Assistant Secretary, and in the same year resigned to become chairman of the United States Peace Commission in Paris, which made a treaty to terminate the war with Spain. President McKinley appointed him as judge of the sixth circuit of the United States circuit court, in which office he served successfully. He published a number of able documents and State papers. In 1903 he was made an associate justice of the Supreme Court by President Roosevelt.

DAY LILY, a genus of plants belonging to the lily family, native to Europe and Asia. Several species are cultivated in the flower gardens of America, especially the fragrant yellow day lily. These plants include many species that are noted for the variegated colors of their flowers. The leaves are long and grow from the ground and the stem is branching. In some parts of Europe the day lily is cultivated to furnish food for cattle.

DAYTON (dā'tŭn), a city of Kentucky, in Campbell County, on the Ohio River, opposite Cincinnati. It is on the Chesapeake and Ohio Railroad. The noteworthy features include the city hall, the high school, and the Speers Memorial Hospital. Among the manufactures are cigars, machinery, cordage, shoes, brick and clothing. It was settled in 1849 and was incorporated the same year as Jamestown, but the name was changed to Dayton in 1893. Population, 1900, 6,104; in 1920, 7,646.

DAYTON, a city of Ohio, county seat of Montgomery County, sixty miles northeast of Cincinnati. It is on the Pennsylvania, the Erie, the Big Four, the Baltimore and Ohio, and other railroads, and on the Miami and Erie Canal, which connects Lake Erie with the Ohio River. The city is divided by the Great Miami River, which is joined here by the Mad River. It is beautifully platted with wide streets, has extensive urban and interurban electric railways, and in the vicinity are numerous macadamized highways. Many of the streets are paved substantially with asphalt and stone. Seventeen bridges span the river, a number of which are constructed of concrete. The city has fine systems of waterworks and sewers.

The business section is located near the river, whence the ground rises to heights of from 200 to 300 feet, and the residence sections are chiefly on the more elevated parts. The notable buildings include the courthouse, the Union Passenger station, the Steele High School, the Y. M. C. A. building, the Dayton State Hospital, and a large number of fine business blocks, the last mentioned including the Arcade and the Commercial. Among the educational and charitable institutions are the United Brethren Theological Seminary, the Academy of Notre Dame, the Saint Elizabeth's Hospital, and a number of manual training and commercial schools. The public library is located in the center of the city, in Library Park. Near the city is the National Military Home for disabled soldiers of the Civil War, which occupies a beautiful tract of 640 acres. Dayton is the seat of the State asylum for the insane and the county orphan asylum. It has a handsome soldiers' monument and numerous fine boulevards.

The city takes high rank as a manufacturing and wholesaling center. Among the chief manufactures are railway cars, flour, bicycles, electrical machinery, radio sets, steam pumps, cash registers, stoves and hardware, cotton and woolen goods, and agricultural implements. In the vicinity are extensive limestone and marble quarries. The first settlement was made on its site in 1796, after a tract of land had been purchased from the Indians by a company which included Jonathan Dayton, from whom the city received its name. In 1805 it was incorporated as a town. It received its charter as a city in 1841 and since then has had a prosperous growth. It was visited by an epidemic of cholera in 1849 and was several times damaged by floods. Population, 1900, 85,333; in 1920, 152,559.

DAYTON, William Lewis, statesman, born in Somerset County, N. J., Feb. 17, 1807; died Dec. 1, 1864. He graduated from Princeton College, studied law, and entered upon a successful practice in Trenton, N. J. In 1837 he was elected to the State Senate and was a United States Senator in 1842-51. He joined the newly formed Republican party and was nominated for Vice President on the ticket headed by John C. Fremont in 1856. President Lincoln appointed him minister to France in 1861, in which position he served the remainder of his life.

DEACONESS (dē̆k'n-ĕs), name of an order maintained among the women in the Christian churches. An order of deaconesses is mentioned in the New Testament, in I. Tim. v., 9-10 and Rom. xvi., 1. It appears that this order was established in Apostolic times, when the deaconesses assisted in the work among members of their own sex and to some extent supplemented that of the deacons. In the early centuries it was connected with the Roman Catholic Church, but was abolished in the twelfth century. Theodor Fliedner, a pastor of the United Evangelical Church of Germany, founded a home for deaconesses in 1836, in which it was made the duty of the inmates to do charitable work. Since then many similar homes were established in Germany and other parts of Europe, such as the various sisterhoods in the Anglican Church of England.

Among the first order of deaconesses established in America is that of Saint Andrew's Parish, Baltimore, Md., under the auspices of the Protestant Episcopal Church in 1855. The order is recognized by the Lutheran Church in America, which erected the Drexel Home for Deaconesses at Philadelphia, Pa., in 1888. In the same year the order was established by the general conference of the Methodist Episcopal Church. It is sanctioned by the Presbyterian and other Protestant churches, and many homes are maintained both in Canada and the United States. The work of the deaconesses in the different churches is quite similar. As a whole the order may be said to constitute an independent society of charitable women, including many trained nurses, who do a noble work in relieving suffering and in spreading Christianity.

DEAD LETTER, a letter that lies at a post office unclaimed for a certain period, or one so defective in address that it cannot be delivered. The postal departments of Canada and the United States maintain dead-letter offices, in their seats of government, where all unclaimed letters are sent, including those that do not show the address, or are unstamped. These letters are opened at the dead-letter office, and, if the address of the writer is found, they are returned to the sender; otherwise, they are destroyed. Not less than 8,000,000 pieces of mail matter that find their way annually to the dead-letter office of the United States, of which about 4,000 do not contain the addresses of the senders. The money and drafts found in letters are returned to those by whom the letters were mailed, if their names and addresses are known, while many periodicals, magazines, and picture cards are sent to various hospitals and libraries.

DEAD SEA, a remarkable lake in the southern portion of Palestine, in the pashalic of Damascus. In the Scriptures it is called the Sea of the Plains, Salt Sea, and East Sea, and is thought to be the site of the ancient Sodom and Gomorrah. It is located about twenty miles southeast of Jerusalem and ten miles south of Jericho, where it stretches north and south a distance of forty-five miles, and has a width of ten miles. It receives the waters of the Jordan and numerous other rivers, though its surface, owing to the arid climate, is 1,317 feet below the level of the Mediterranean. It is bordered by lofty cliffs of limestone along its eastern and western shores, while its northern and southern extremities are marked by low and dismal marshes. Violent earthquakes that occurred in periods far remote are evidenced by lava and volcanic deposits. Thermal and sulphur springs, pumice stone, rock salt, and other phenomena abound.

The water of the Dead Dea is remarkable for the quantity of its saline ingredients. In every hundred pounds of its water there are over twenty-six pounds of saline substances, more than one-fourth. It is nauseous to the taste and smell, and so buoyant that the human body floats upon its surface. The maximum depth in the central portions is 1,315 feet, while the southern lagoon is twelve feet deep in the middle, and at the edges not more than three feet. Geologists have advanced the theory that the inflowing waters carry sufficient saline matter to transform the lake into solid saline deposits within a considerable period of time, unless present conditions become greatly modified by climatic or volcanic changes. The saline density increases as the arid atmosphere carries off inflowing moisture by means of evaporation.

DEADWOOD, county seat of Lawrence County, South Dakota, in the Black Hills, on the Chicago and Northwestern and the Chicago, Burlington and Quincy railroads. It is surrounded by a mining region which produces gold, silver, tin, lead, and clays. The chief buildings include the high school, the Franklin Hotel, and the Masonic Temple. Among the industries are flouring mills, brick and lime works, smelters and reduction works, and machine shops. It has waterworks, electric lights, macadamized streets, and telephone connections. Deadwood was settled in 1876 and owes its growth largely to the development of its mining interests. Population, 1925, 2,432.

DEAF-MUTES (dĕf'-mūts), the persons who are deprived of both hearing and speech, the dumbness resulting principally from deafness existing either at birth or in very early childhood. Dumbness results in this way because deaf children, being deprived of the sense of hearing, are unable to imitate sounds. Imitation being the basis of learning to utter regular sounds, deafness in early life, therefore, is the most prolific cause of dumbness. The per cent. of deafness varies somewhat in the different nations and stages of social and intellectual development, but usually rates one affected individual to every 1,500 to 1,800, the mean being about the usual average. Among the most prolific causes are local or climatic conditions, ill health of the mother, scrofula, and the heredity of certain physical defects. It is certain that deafness is not communicated by heredity, since what is transmitted is but the tendency to such disease, or some anomaly of the auditory organs or of the nervous system, of which deafness is the result or symptom.

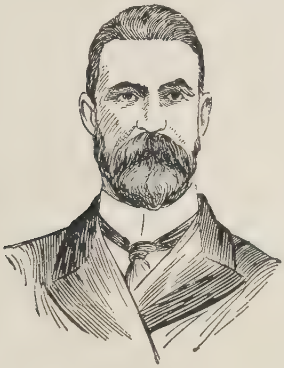
Investigations made by the government indicate that about nine per cent. of the children born of deaf and dumb parents, or of whom one is thus affected, inherit tendencies to deafness. This is in accord with the law of heredity, that the offspring tends to revert to the normal type. Deafness is frequently acquired in old age and through such diseases as measles, paralysis, typhus, smallpox, and other cerebral affections, and particularly through violent attacks of scarlet fever, by which the patient suffers from an inflammatory state of the throat, which extends to the internal ear and more or less suppurates and destroys the delicate portions of the auditory organs. No defect is visible in most deaf-mutes, and no application has yet been discovered to render cure possible. Deaf-mutes are obliged to observe and imitate the expressions and actions which attend various states of the mind, by means of which they communicate their feelings and desires to others. This has resulted in the development of the *sign language,* through whose agency deaf-mutes have learned to acquire considerable advancement in educational arts.

Among the early discoverers of the principles underlying the teaching of deaf-mutes is Jerome Cardan (1501-1576), an Italian physician, who published a treatise on the association of writing with speech, and speech with thought, pointing out the fact that written characters and thought can be associated without the intervention of vocalized sound. The practical instruction of deaf-mutes was demonstrated in France in 1743 before the Academy of Sciences, which institution attested the methods employed by Jacob R. Pereira (1715-1780), a Spanish teacher. In the United States there are ninety schools, including both public and private, for deaf-mutes. They are attended by more than 10,000 students. Nearly all the states have institutions supported by public appropriations for the instruction of deaf-mutes. A national college is located at Washington, and is under the immediate direction of the United States. Conventions and institutes of deaf-mutes have been held in the United States for more than fifty years, while the *American Annals of the Deaf and Dumb* has been published since 1847. The method employed makes use of the manual alphabet, combining it with observations of the lips of the teacher. There are two alphabets—a *one-handed* alphabet and a *two-handed.*

The method of teaching by watching the lips during articulation was first advocated by Samuel Heinicke (1729-1790), an educator of Germany. It is known as the *articulation and lip-reading* method. A public institution based upon his theory of instruction was established in 1779 at Leipzig, Germany, and the institutions of Germany and Austria are still based upon this system. The pupil is taught to recognize words by observing the motion of the lips and tongue of the instructor, who also makes use of diagrams and pictures to facilitate the work. Persons trained by this method are efficient in carrying on a conversation with any one not taught in deaf-mute methods, and it is often quite difficult to see that the speaker is afflicted in any way. In this respect it is superior to the alphabet method, but, like the latter, it is used within sight of the person with whom the conversation is conducted. The German method was adopted by the Clarke Institute at Northampton, Mass., in 1867. In this system pupils are not instructed as early as in public schools, or in courses using the alphabet method. However, it is quite certain that the articulation and lip-reading method is the superior, and is either used or largely combined with the other method in nearly all the schools for deaf-mutes.

DEAK (då'äk), **Franz,** statesman, born in Kehida, Hungary, Oct. 17, 1803; died at Budapest, Jan. 29, 1876. He studied at Raab, entered upon the practice of law, and became noted for his eloquence and enlightened patriotism. In 1832 he was elected to the Hungarian diet, where he became a leader of the liberals. He was chosen minister of justice in the national cabinet after the Hungarian revolution, and effected many reforms in the administration of justice. He resigned his portfolio when Kossuth came into power on Sept. 17, 1848, living in retirement until 1860, when he became leader of the moderate party. In 1861 he drew up an address to Francis Joseph, Emperor of Austria, demanding the constitution of 1848. The request was refused at first, but, after the success of Prussia against Austria in 1866, the constitution was granted. The union of Austria and Hungary in the dual form of government is due largely to him, under which the Emperor of Austria is also King of Hungary, and the people of the latter country are granted equal liberties and constitutional rights with those of Austria. His death was mourned by the entire nation and has been commemorated as a national event.

DEAKIN, Alfred, public man, born in Melbourne, Australia, Aug. 3, 1856; died Oct. 7, 1919. He studied in his native city and was elected to the Parliament of Victoria from West Bourke in 1879. Later he was reëlected several times consecutively and in the meantime held a number of public offices, such as solicitor-general and minister of public works. In 1901 he was made the first attorney-general of the Commonwealth of Australia, serving until 1903, when he became Prime Minister, but was succeeded by Watson the same year. He was again elected Prime Minister in 1905 and 1906. Deakin was not only an acknowledged leader in the Commonwealth, but was vigorous as a supporter of the fiscal policy of Joseph Chamberlain. He published "Irrigation in Egypt and Italy," "Temple and Tomb," and "Irrigation in Western America."


ALFRED DEAKIN.

DEANE (dēn), **Silas,** diplomatist, born in Groton, Conn., Dec. 24, 1737; died in Deal, England, Aug. 23, 1789. He graduated from Yale in 1758, served as delegate from his State in the Continental Congress of 1774-76, and in the latter year accompanied Benjamin Franklin to France on a political and financial mission. He was largely instrumental in securing the assistance of Lafayette, De Kalb, and others to aid in the American cause. Owing to some misapprehension regarding promises and extravagant contracts, he was recalled by Congress in 1777, and later returned to France to secure proof that he was not blamable, but found that country unfriendly to his mission. He died in poverty among strangers, and an investigation made in 1842 showed that his country wronged him through the charges of political enemies. The government of the United States paid a large sum of money due him to his heirs. Among his writings regarding the interesting question of faithful service he published the following: "Address to the Citizens of the United States," "Paris Papers," and "Letters to Hon. Robert Morris."

DEARBORN (dēr'bŭrn), **Henry,** physician and soldier, born in Hampton, N. H., Feb. 23, 1751; died June 6, 1829. After extensive study, he entered upon the practice of medicine in 1772 at Nottingham Square, and took training in military tactics during his leisure hours. He gathered sixty minutemen and the day following the Battle of Lexington marched to Cambridge and covered the American retreat at Bunker Hill. He was taken prisoner while with Arnold's expedition at Quebec, but later fought at Stillwater, Saratoga, Monmouth, Newtown, and at the siege of Yorktown. In 1789 he was appointed United States marshal for Maine by President Washington, was twice elected to Congress, and served eight years as Secretary of War under President Jefferson. At the beginning of the War of 1812 he was advanced to be major general, was made commander of the northern department, and rendered efficient service as a leader to the Americans. He captured York (now Toronto) and Fort George. President Monroe appointed him minister to Portugal in 1822, in which position he served two years.

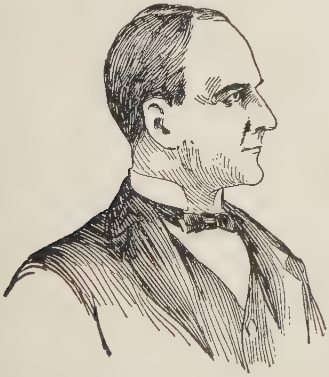
DEARBORN, Fort, a fortress built in 1803 at the mouth of the Chicago River, near Lake Michigan, on the site of Chicago. Its purpose was to form a defense against the Indians. When war was declared against England in 1812, General Hull, the commander, ordered its abandonment and the withdrawal of the garrison to Detroit as a measure of safety. The Americans were attacked by Indians while retreating and two-thirds were massacred, including twelve children. The remainder surrendered on promise of safety and were permitted to return to their homes, after being taken to Fort Mackinaw. In 1816 Fort Dearborn was rebuilt and was garrisoned till 1837. The last building was destroyed in the Chicago fire of 1871.

DEATH (dĕth), the extinction of life in animals and plants, resulting from a cessation of the vital functions. It sometimes occurs from decay of nature, as in old age, but more commonly from disease and accident. The two forms consist of death of the whole body, and death of a portion, or the *somatic* and the *interstitial.* There are three principal modes of dying—those that begin at the lungs, heart, and brain—and they are respectively designated as suffocation, syncope, and coma. Death by *suffocation* begins at the lungs. In this form the functions of respiration are suspended, after which the heart ceases beating in about three minutes, though the pulse may be felt for some time after all other signs of life have vanished. When the action of the heart ceases from loss of blood, death results by *syncope,* or *fainting.* Death may likewise take place in this form by a decline of the aortic pressure of the heart, by a loss of nerve power, and by starvation. Death by *coma* begins at the brain. It is indicated by profound stupor and the breathing is accompanied by snoring. Human life is of longest duration in individuals that have exercised the powers of the brain, generative system, and other vital organs in moderation, and is curtailed both by disuse and excess. Death ensues when all vitality and power of action is extinct. The death rate per 1000 of population, in 1928, in the United States was 11.4 and in Canada it was 11.1, as against a birth rate of 20.6 in the United States and 24.6 in Canada.

DEBORAH (dĕb'o-rah), the name of two characters mentioned in the Bible. The first lived about 1857 B. C. and is mentioned on the occasion of her burial at Bethel, under the tree of Allon-bachuth. The other lived about 1316 B. C., is regarded the mother in Israel, and was a prophetess, but is called a judge by some. Her patriotism led to the delivery of the Hebrews from the oppression of the Canaanites, under which they had suffered twenty years. The Song of Deborah is recorded in Judges v., and is one of exultation over the deliverance of the nation. The Old Testament contains no poetry of greater beauty, though it is thought to constitute the oldest portion of the Scriptures. Deborah is credited a member of the tribe of Ephraim.

DEBRECZEN (dĕ'brĕ-tsĕn), a city of Hungary, capital of the county of Hajdú, 135 miles east of Budapest. It is located on a fertile plain, has railroad facilities, and is noted as a market for cattle and swine. The manufactures include soap, clay pipes, flour, sausages, and cotton and woolen goods. Among the buildings is the theater, a library, and the Rathaus. It is famous as the seat of a Protestant college founded in 1531, which has a library of 100,000 volumes. Debreczen became a Protestant town in the seventeenth century and was occupied by a German army in 1849. Population, 1922, 78,843.

DEBS (dĕbz), **Eugene Victor**, labor leader, born in Terre Haute, Ind., Nov. 5, 1855; died Oct. 20, 1926. He studied in the public schools and became a house painter at the age of sixteen years, but soon after engaged as railroad fireman. He was chosen a member of the State Legislature in 1881, where he was instrumental in securing the enactment of various laws in the interest of labor. The Brotherhood of Locomotive Firemen retained him as secretary and treasurer for fourteen years. Through his efforts the United Order of Railway Employees was formed, and in 1893 he organized the American Railway Union. The latter organization supported the workmen of the Pullman Palace Car Company in the famous strike for higher wages in 1894, and a great railroad strike followed. President Cleveland promptly ordered Federal troops to Chicago to enforce the decrees of the United States court as to the mail service and interstate commerce. Later Debs and several others were indicted and imprisoned six months. The political term, "government by injunction," originated largely from the troubles in Chicago. He was sentenced to imprisonment for ten years, in 1918, for opposing the United States War policy. In 1900, 1904, 1908, 1912, and 1920 he was the Social Democrat candidate for President.


EUGENE V. DEBS.

DEBT (dĕt), an obligation, liability, or claim incurred. Debts are either personal, corporate, municipal, county, state, provincial, or national. It is a well-known characteristic of many individuals and the government to draw financial aid from the prospects of future development in commercial enterprises. The total indebtedness of the United States, of all interests combined, though small when compared with that of other nations, is so vast that one is astounded when contemplating future payment. The possibility that individuals or states possess for going into debt is often a source of convenience and advantage, in that by means of it enterprises are developed and the prosperity of a country is affected more or less favorably. The total national indebtedness of the nations has been increasing constantly. In 1793 it aggregated $2,433,250,000, while in 1900 it had reached the enormous sum of $31,201,759,000, an amount wholly incomprehensible. At the beginning of the Civil War, in 1861, the principal of the public debt in the United states was only $64,842,288, while the net receipts amounted to $55,000,000 per annum. The war increased the indebtedness to its greatest height on Aug. 1, 1865, being then $2,756,431,571.

The national debt of the United States, in 1928, was $17,604,293,201. In the same year Canada had an indebtedness of $2,297,000,000. The war debts due the United States from foreign countries was as follows:

Great Britain	$4,505.000,000
France	4,025,000,000
Italy	2,032,000,000
Belgium	414,000,000
Russia	280,000,000
Poland	199,000,000
Czechoslovakia	179,000,000
Rumania	66,000,000
Jugoslavia	62,000,000
Austria	34,000,000
Greece	20,000,000
Armenia	17,000,000
Esthonia	15,000,000
Finland	9,000,000
Latvia	7,000,000
Lithuania	6,000 000
Hungary	2,000,000
Nicaragua	300,000

DECALOGUE (dĕk'á-lŏg), the ten commandments given to Moses on Mount Sinai. They are placed in the Bible before the collection of laws called the Book of the Covenant, but are also found in Deut. v., 1-21. Christ summed them up in two commandments.

DECAMPS (dẹ-kän'), **Alexandre Gabriel,** painter, born in Paris, France, March 3, 1803; died Aug. 22, 1860. He received training under several noted masters and chose originality in the style and subjects of treatment. His paintings are notable for depth and richness of tone. He traveled extensively in the East, studying oriental life, and afterward produced many of the scenes with bold fidelity. Several medals were granted to him at the Paris Exposition of 1855. As early as 1839 he was made a chevalier of the Legion of Honor. Among his most important works are "Children Let Out of a Turkish School" and "Defeat of the Cimbri."

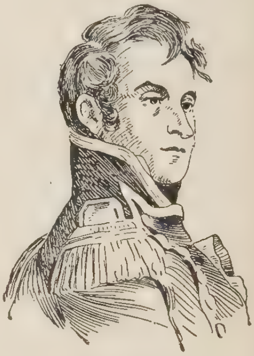
DE CANDOLLE (dẹ-kän-dŏl'), **Alphonse Louis Pierre Pyramus,** Swiss botanist, born in Paris, France, Oct. 27, 1806; died April 9, 1893. He was the son of Augustus Pyramus De Candolle (1778-1841). After securing an education, he became a professor of botany in the Academy of Geneva. In 1866 he was elected President of the International Botanical Congress at London, and the next year of the congress that met at Paris. The University of Rostock made him an honorary doctor. He was decorated with the cross of the Legion of Honor and held important offices in several scientific societies. Among his best known writings are "History of Sciences and Scientists," "Introduction to the Study of Botany," "Beginning of Plant Culture," "Introduction to Natural History," and "Theory of Botany." His son, Anne Casimir Pyramus, was born in Geneva, Switzerland, Feb. 26, 1836, and attained eminence as a student of natural science. He published "Productions of Cork," "Dicotyledonous Plants," and "Investigation of Piperaceae."

DECAPODA (dê-kăp'ô-dȧ), the highest order of crustaceans. The members of this order have five pairs of legs, the first pair being enlarged to form claws, as in the crawfish, lobster, shrimp, and prawn. The term is also applied to one of the classes of cuttlefish. They have eight arms and two tentacles, the latter being longer than the arms and serve to seize their prey, or to moor themselves safely in a stormy sea.

DECAPOLIS (dê-căp'ô-lĭs), a word meaning ten cities, applied to a district of eastern Palestine prior to the second century A. D. The ten cities included in the district comprised Canatha, Damascus, Dion, Gadara, Garasa, Hippos, Pella, Philadelphia, Raphana, and Scythopolis. It is probable that these cities were built by the Romans in 64 B. C. after the conquest of Syria, and received grants of certain commercial privileges.

DECATUR (dê-kā'tẽr), a city in Illinois, county seat of Macon County, thirty-seven miles east of Springfield, on the Illinois Central, the Wabash, and other railroads. It occupies a fine site on the Sangamon River. The chief buildings include the courthouse, the library, and the James Millikin University. The manufactures comprise flour, woolen goods, soap, brass goods, ironware, bridges, hominy, engines and boilers, linseed oil, and furniture. It has gas and electric lights, waterworks, pavements, and street railways. The surrounding country is agricultural. It was settled in 1830 and incorporated in 1836. Population, 1920, 43,818.

DECATUR, Stephen, naval officer, born in Sinnepuxent, Md., Jan. 5, 1779; died March 22, 1820. He was the son of Stephen Decatur (1751-1808), an American officer of high rank. His first naval experiences were on board his father's ships, becoming midshipman at nineteen, and he saw service under Commodore John Barry in the frigate *United States.* He served with distinction against the French and later was one of thirty-six lieutenants who were retained for the regular service. He took an active part against Tripoli in 1801-05, in the Mediterranean, as first lieutenant of the *Essex.* Later he commanded the *Enterprise* and took a conspicuous part when the *Philadelphia* was captured by the enemy. He promptly entered the harbor of Tripoli, boarded the *Philadelphia,* and, after setting the ship on fire, escaped to his own vessel under a rain of shot. This was referred to by Admiral Nelson as the "most daring act of the age." In 1804 he was promoted to the rank of captain. When the War of 1812 commenced, he was placed in command of the warship *United States,* and later was awarded two gold medals by Congress for capturing the British frigate *Macedonia.* In 1815 he proceeded to Algeria to punish the Dey for interfering with American merchantmen, and required that country and Tunis to pay damages on account of violating their treaties with the United States. Later he became involved in a duel with Commodore James Barron and was mortally wounded.



STEPHEN DECATUR.

DECCAN (dĕk'kạn), the name applied to a large scope of country in eastern India, particularly to the portion lying between the Kistna and Nerbudda rivers, but also in a general way to the whole country lying south of the Vindhya Mountains. When applied in the latter sense, it includes the Madras presidency, Mysore, Hyderabad, part of Bombay, Travancore, and other dependent states of India.

DECEMBER (dê-sĕm'bẽr). See **Month.**

DECEMVIRI (dê-sĕm'vĭ-rī), the term applied to the ten men appointed to systematize and codify the public laws of Rome. With this end in view, a number of commissioners proceeded to Greece to study the laws of Solon and other celebrated Greek legislators. On their return in 451 B. C., ten patricians secured an appointment to write the laws under the leadership of Appius Claudius. The laws were set on twelve tables of wood in the Forum, and became known as the Laws of the Twelve Tables. This action on the part of Rome was due to the dissatisfaction of the plebians, because the patricians had no written law to direct them.

DECIUS (de'shi-us), **Caius Messius Quintus Traianus,** Emperor of Rome in 249-251. He was born in Pannonia and commanded the troops of Emperor Philip on the Danube. His soldiers revolted in Moesia and compelled him, under threat of death, to proclaim himself emperor. Philip marched against him and was slain in battle near Verona. Decius, in his short reign of two years, persecuted the Christians. He forced Cyprianus, Bishop of Carthage, to leave his see, imprisoned and tortured Origen, and cast the bishops of Antioch and Alexandria in prison. In 251 he conducted an expedition against the Goths, who had invaded Rome, but he and his son fell in battle near the Danube.

DECLARATION (dĕk-lȧ-rā'shŭn), the act of declaring, or making known, or publishing an avowal or affirmation. The most important declaration is the one issued by the American colonies, which see. A declaration of war is a formal notice that, by the practice of nations, belligerents are expected to give before hostilities begin. The *Declaration of Rights* is a document which was drawn by Parliament in 1689 and presented to William III, and Mary, when they accepted the crown of England. In this document Parliament announced that the election of members of Parliament shall be free, that Englishmen have the right to carry arms for their own defense, that unusual punishments and excessive fines shall not be inflicted, that public revenues shall not be collected without the consent of Parliament, and that a standing army shall not be raised or maintained in times of peace. Subsequently the *Bill of Rights,* a formal enactment, contained these articles. The *Declaration of Paris* is an instrument signed by the congress of Paris in 1856, which was subsequently accepted by the principal powers. Among the declarations it contained these: Neutral goods, except contraband of war, are not liable to capture under an enemy's flag; privateering should be abolished; the goods of an enemy, except contraband of war, may be covered by a neutral flag; and blockades must be effective in order to be binding.

DECLARATION OF INDEPENDENCE, the solemn declaration that severed the thirteen colonies from Great Britain. At the beginning of the struggle a permanent separation was not contemplated. An independent government was so distasteful to the colonies, aside from New England, that Congress declared against it on July 6, 1775. Subsequent events and the publication of Thomas Paine's "Common Sense" set ablaze the spirit of 1776. The Legislature of Pennsylvania was so pleased with Paine's production that it voted him a grant of $2,500. The Virginia convention instructed its delegates in May, 1776, to propose a resolution of independence. Accordingly Richard Henry Lee offered such a resolution on June 7. The Colonial Congress on June 10 resolved to appoint a committee to prepare a declaration "that the United Colonies are, and of right ought to be, free and independent states." The committee consisted of Thomas Jefferson, John Adams, Benjamin Franklin, Roger Sherman, and Robert R. Livingston. This committee reported a draft of the Declaration on June 28, and on July 2 the colonies were declared free and independent by resolution.

The Declaration of Independence was formally passed July 4, 1776. It was written by Thomas Jefferson and only a few changes were made from the original draft. At that time Congress was in session at the State House in Philadelphia, known as Independence Hall. The old "Liberty Bell" rang out the glad tidings and the beating of drums and firing of cannon followed. John Hancock was the president of the Congress, and the Declaration of Independence was signed by him and the representatives from the different colonies. Charles Carroll (q. v.), of Maryland, was the last survivor of the signers.

DECLINATION (dĕk-lĭ-nā'shŭn), in astronomy, the angular distance of a heavenly body from the celestial equator, measured along a great circle passing through the poles of the heavens and through the center of the body. That is to say, it is the angle which a line drawn from the center of the earth to the heavenly body makes with the plane of the Equator. The place of a star in the heavens is determined by its right ascension and declination, which correspond to the longitude and latitude of the earth's surface. Circles of declination are great circles which pass through the poles and cut the Equator at right angles. Twenty-four of these divide the Equator into arcs of 15° each, known as *hour circles* or *hoary circles. Magnetic declination* refers to the magnetic needle in the compass, and is the variation of the magnetic needle from the true meridian of a place on the earth's surface. The variation may be either east or west of a place, differs at different points, and is not the same at a given locality at different times.

DECOMPOSITION (dē-kŏm-pō-zĭsh'ŭn), in chemistry, the separation of a compound into more simple substances. When the red oxide of mercury is heated, it undergoes decomposition and is resolved into mercury and oxygen. Water, when subjected to a current of voltaic electricity, is decomposed into hydrogen and oxygen. Decomposition in vegetable and animal matters is due to minute animals or plants, known as *bacteria* and *ferments*. Many decompositions are effected by light, as those of nitric acid and of the silver salts used in photography.

DECORATION DAY (dĕk-ō-rā'shŭn), the day set apart in the United States for commemorating by appropriate exercises the services of fallen soldiers and sailors. The practice originated in the South before the war closed, and for a number of years was observed by individual parties in the North. The widespread custom owes its origin to an official order made by Gen. Logan in 1868, then commander of the Grand Army of the Republic. This order contained the following: "The 30th of May, 1868, is designated for the purpose of strewing with flowers or otherwise decorating the graves of comrades who died in defense of their country during the late rebellion, and whose bodies now lie buried in almost every city, village, hamlet, and churchyard in the land. In this observance no form of ceremony is prescribed, but posts and comrades will in their own way arrange such fitting services and testimonials of respect as circumstances will permit."

The day is usually called Decoration Day, though in some portions of the country the term Memorial Day is used. Different days were observed by the various states for some years, but the 30th of May has been settled upon universally and is a legal holiday in most of the states of the Union. In the South it is commemorated by decorating the graves of those who fought to preserve the Confederacy. Usually the program includes processions, orations, and the floral decoration of the graves. The exercises observed on this day are among the most appropriate and beautiful connected with public events in the history of the United States, and have taken a deep hold upon the people.

DE COSTA, Benjamin Franklin, clergyman, born in Charlestown, Mass., July 10, 1831. He entered the ministry of the Protestant Episcopal Church in 1857, after graduating from the Biblical Institute at Concord, N. H. He was rector of several important charges up to the Civil War, when he entered the Massachusetts infantry as chaplain. Leaving the army in 1863, he engaged in editorial work and miscellaneous writing. Besides contributions to the *Magazine of American History* and the *Christian Times,* he published "Pre-Columbian Discovery of America by the Northmen," "The Rector of Roxburgh," and "The Moabite Stone." He was prominent as a rector of Saint John's Church, New York City, an organizer of temperance societies, and a member of the Huguenot Society of America. He died Nov. 4, 1904.

DECOY (dē-koi'), a contrivance to entice wild game into a snare, or lure it to come within the range of a weapon. The decoys used differ according to the game to be secured. Success in the art of alluring depends to a considerable extent upon the close observation of animals and mechanical skill in constructing the contrivances. Wild ducks are attracted by decoys which closely resemble the living animals. They are placed in the water near the shore in such a position that they appear to be swimming. In this way it is possible to allure the ducks to alight, bringing them within gun range of the concealed sportsmen. Other decoys of a similar kind are used to allure geese, brants, and prairie chickens.

DEDHAM (dĕd'am), county seat of Norfolk County, Massachusetts, ten miles southwest of Boston, on the Charles River. It is on the New York, New Haven and Hartford Railroad. Among the noteworthy features are the courthouse, the public library, the town hall, the Historical Society building, and several fine churches. The manufactures include pottery, dyeing plant products, cotton goods, and machinery. The first public school supported by a general tax in America was established at Dedham in 1644. Population, 1905, 7,774; in 1925, 13,918.

DEDUCTIVE METHOD (dē-dŭk'tĭv), the mode or process of teaching in which the student is taught to proceed from general truths to particular facts. It proceeds from rules and definitions to particular facts, instead of first investigating particular facts and then forming and applying rules. To illustrate, an explorer who begins at the mouth of a main stream and follows it to its source, then explores its tributaries from their mouths upward, employs the deductive method, which is the reverse of the inductive method. If the explorer were to use the latter, he would trace the various rivulets from their source to the common débouchure, or outlet. In the deductive method the student reaches the smaller through the greater, the special from the general; while in the inductive method the process is reversed, and the greater is reached through the less, the general through the special. Many branches of study are taught by the deductive method, as geometry, in which the theorems form general truths, and are proven by the demonstration of particular propositions. In psychology we have attained to laws of high generality, hence it offers a wide scope for deduction.

DEE, a river of England and Wales, rises in Lake Bala, Merionethshire, and flows by an estuary into the Irish Sea, about 20 miles below Chester. The chief tributaries are the Alwyn and Treveryn, and a canal seven miles long extends from Chester to the estuary. It is about 85 miles long and is connected by canals with the rivers of central England.

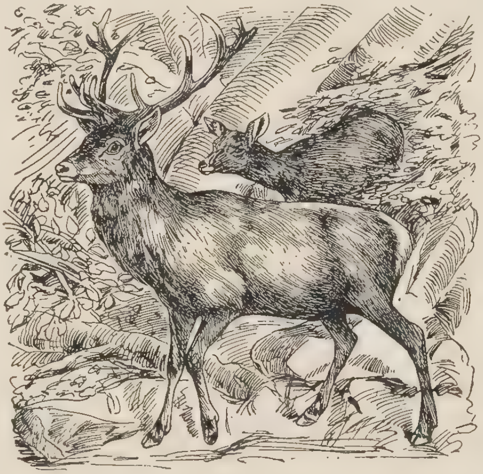
DEE, a river of Scotland, rises in the vicinity of Ben Macdhui, and flows into the North Sea at the harbor of Aberdeen. The Geauley is the principal tributary near its source, and farther in its course it receives the Lui and Feugh. Balmoral Castle is on its banks. It is about ninety miles long. Another river of Scotland called Dee rises near the northern boundary of Kirkcudbrightshire, and after a course of about fifty miles flows into the Solway Firth. About seven miles of its lower course is navigable. It is noted for its fine salmon fisheries.

DEED, an instrument in writing, signed and delivered by the party bound to the donee or purchaser, conveying title to real estate. In some countries it is necessary that the deed be executed under seal, but in others the private seals have been abolished, hence a deed conveying land may or not have a seal, depending upon the state or country where it is executed. In most states it consists of an instrument in writing that has been acknowledged by a notary public or other competent officer, who certifies to it under his seal or official signature. A *warrantee deed* is one in which the party conveying title agrees to defend it against all claimants, while a *quitclaim deed* conveys only what title may be in the party making the deed. A *deed of trust* is similar to a mortgage, the title depending upon the payment of money from the seller to the purchaser. Instruments of this kind, to be valid in some states, must be witnessed by two persons. It is universally required that the wife join the grantor, if he is married, in making the deed, and it must be recorded in the office of the county recorder or register of deeds.

DEEMS, Charles Force, clergyman and educator, born in Baltimore, Md., Dec. 4, 1820; died Nov. 18, 1893. He graduated at Dickinson College in 1839, entered the Methodist Episcopal ministry, and was engaged in pastoral work until 1842. In the latter year he was elected professor of logic in the University of North Carolina, and in 1845 became professor of chemistry in Randolph-Macon College. In 1855 he resumed pastoral work, remaining until his death as pastor of the Church of Strangers in New York City. His close friendship with Cornelius Vanderbilt led to the endowment of the Vanderbilt University in Tennessee. Among his writings are "Chips and Chunks for Every Fireside," "Weight and Wings," and "The Triumph of Peace." He was editor at different times of the *Annals of Southern Methodism, Southern Methodist Episcopal Pulpit,* and *Frank Leslie's Magazine.*

DEER, a family of ruminant mammals, most species of which are distinguished by deciduous branching horns or antlers. The horns are solid structures growing from the frontal bone, with many branches and tines, growing to an enormous size. They appear the second spring and are shed each year. In the *reindeer* both male and female bear horns, while in other species the female is hornless. The horns appearing first consist only of the beams. In the second year a basal branch appears, the following year a second branch, and in successive years a greater or smaller number of subdivisions grow from the main beam. Each year's growth is at first covered with a sensitive skin or velvet, which later dries and peels off, and a bony ridge is formed on the antlers just above the base of attachment to the frontal bone. The *water deer* of China and the *musk deer* have no horns. There are no deer in Australia and only a few species are found in Africa, though antelopes take their place, but they are widely distributed in many portions of the other continents and some of the islands. The smallest of the family include the Indian *muntjacks,* while the largest are the *moose* or *true elk.* Among the species common to the colder latitudes are the *reindeer, elk, caribou,* and *moose,* while in the temperate and warmer regions are found the *fallow deer, stag, roebuck, sambo deer,* and *muntjack.* The *red deer* of Europe is a fine animal, of which the female is known as the *hind* and the male as the *stag,* the latter having large antlers.

The deer family has sharp hoofs with a cleft between and the feet have two toes. In most species the ears are large and the hair is crisp and thick. They vary in color, though they are mostly brown with reddish tints and white spots. The senses of sight, hearing, and smell are highly developed, thus enabling them to guard against their enemies. Swamps, plains, and forests are alike favorite haunts, though they are seen mostly on hills in the daytime, from which they can take a survey of a large scope and guard against danger. They are fleet of foot, moving with the speed of a race horse when danger confronts them. Their ability to swim is highly developed, the swiftest canoe being alone able to overtake them. The young are born in the spring and kept in a secluded place, which is visited only at odd times in the day by the mother, though it is made her exclusive haunt at night. The food consists of grasses during the warmer season, and of bark, tufts of dried grass, and rushes during the winter. While deer are easily tamed, the



RED DEER OF EUROPE.

reindeer is the only one of the group that has been completely domesticated.

DEER MOUSE, or **Jumping Mouse,** a class of small mice that resemble the deer in color and in being active. They are about four inches long and have a tail somewhat longer than the body, and the hind legs exceed in length the fore legs. The deer mouse of Canada is a representative species. It is able to jump ten feet at a bound. Other species are distributed in various parts of Mexico and the United States, and all are rodents that show close resemblance to the jerboas.

DEFIANCE (dê-fī′ans), county seat of Defiance County, Ohio, fifty miles southwest of Toledo, at the junction of the Tiffin and Maumee rivers. It is on several continental highways and on the Wabash and the Baltimore and Ohio railroads. The surrounding country is rich in agriculture. Among the chief buildings are the courthouse, the public library, and Defiance College. The manufactures include automobile accessories, hardware, motor trucks, ironware, and heavy machinery. It has systems of public lighting, waterworks, and street paving. Population, 1900, 7,579; in 1920, 8,876.

DEFOE (dê-fō′), **Daniel,** author, born in London, England, in 1661; died April 24, 1731. He was the son of James Foe, a butcher, the prefix *De* being added to the name by the author after he reached manhood. He was educated at Newington Green, near London, and at first intended to enter the ministry, but engaged in writing and publishing. Both he and his father were Dissenters, and he was with Monmouth's army and with that of King William in 1688. Later he traveled in Germany, France, and Spain and went through bankruptcy, but afterward discharged his debts by making full payment. His "Treatise Against the Turks" appeared in 1683 and was followed by the satirical poem, "The True-born Englishman," in which he apologized for the king on account of his being a Dutchman, and showed that the English people were the descendants of various races. In 1702 his publication, called "The Shortest Way with Dissenters," aroused the opposition of the House of Commons and it was ordered burned, while a reward was offered for his arrest. He was described as "A middle-sized, spare man, about forty years old, of a brown complexion and dark brown colored hair, but wears a wig, a hooked nose, sharp chin, gray eyes, and a large mole near his mouth." After his arrest he was tried and punished in the pillory, confined, and imprisoned. He wrote "The Hymn to the Pillory" while in prison, and began the publication of a weekly called the *Review,* which he issued regularly for nine years.

The literary vigor and practical talent of Defoe were admired by Lord Godolphin, who employed him on the staff of commissions to bring about the union with Scotland. His visit to Scotland resulted in his "History of the Union." In 1713 he was again confined for publishing objectionable writings and after his release gave up politics. The work by which he is best known, "Robinson Crusoe," was published in 1719. This publication netted him about $5,000 by springing at once into popularity, and has ever since remained an extremely popular and widely read production. Among his other well-known writings are "Colonel Jack," "Memoirs of a Cavalier," "History of the Plague," "Moll Flanders," "Adventures of Roxana," "Everybody's Business is Nobody's Business," and "Captain Singleton." The writings of Defoe are characterized by vigor, clearness, and simplicity. His work in fiction is exceptionally strong on account of possessing the appearance of truth. His "Memoirs of a Cavalier" is regarded one of the best accounts of the civil wars ever written.

DEGREE (dê-grē′), in mathematics, the 360th part of the circumference of a circle. The circumference of every circle is supposed to be divided into 360 equal parts, each being called a *degree.* A degree is divided into sixty minutes, and a minute into sixty seconds. The signs respectively are °, ′, ″. They are written to denote values in this wise: 48° 16′ 12″, meaning forty-eight degrees sixteen minutes and twelve seconds. It is said that an angle contains as many degrees or parts of a degree as there are in the arc subtended by an angle at the center of a circle. We speak of a star as located a given number of degrees above the horizon, or declined a given number of degrees from the Equator. Likewise geographical points are located at certain degrees of latitude or longitude.

A *degree of latitude* is the 360th part of the earth's circumference, north or south of the Equator, while a *degree of longitude* is the 360th part of the earth's circumference measured east or west of a fixed meridian. Since the length of a degree depends upon the magnitude of the circumference of a circle, it is evident that the length of the degrees of longitude is greatest at the Equator and diminishes gradually as we proceed toward the poles, at which a degree equals 0. A degree of longitude at the Equator contains sixty geopraphical or sixty-nine and one-sixth statute miles. Since the earth is flattened at the poles, the degrees of latitude increase slightly as the poles are approached. The term is also applied to a unit of difference in temperature, called a degree of *Fahrenheit,* when the difference between the freezing point and the boiling point of water is divided into 180 parts; *Centigrade,* when it is divided into one hundred parts; and *Reaumur,* when it is divided into eighty parts.

DEGREE, a mark of distinction conferred by colleges and universities on students and others as a testimony of scholarship in the arts or sciences. It is *ordinary,* when conferred upon students, and *honorary,* when conferred upon members or distinguished strangers as a mark of respect. The value and designation of degrees depend upon the branches covered by college and university courses, though they include mostly the degrees of *bachelor, master,* and *doctor* in the branches of medicine, law, divinity, music, sciences, and arts.

DEHORNING (dē-hôrn'ĭng), the practice of preventing the growth or removing the horns of cattle. It came into vogue in Europe about the middle of the nineteenth century, and is now practiced very extensively in Canada and the United States. Formerly it was held to be cruelty to animals, but actual experience has demonstrated that dehorning is beneficial to cattle, largely for the reason that it renders them more gentle and docile, hence they feed and may be housed to better advantage. However, the horns should be removed when the weather is mild and at a season of the year when flies are not troublesome. Dehorning is done by placing the animal in a substantial stall, in which its head is held firmly in place, and the horns are cut off near the base with a sharp saw. A better way is to prevent the growth of horns as soon as the horn button is beginning to develop on the head of the calf, when about four or five days old, and this may be done by applying caustic potash. It requires only a few minutes to make the application, after which a scab forms, but this falls off in about a month, and the horns never grow on the smooth poll that remains.

DEISM (dē'ĭz'm), the tenets or doctrines of a deist. This system of belief admits the being of a God and acknowledges a number of his perfections, but does not hold to the existence and necessity of a divine revelation.

DEKALB (de-kălb'), a city in Dekalb County, Illinois, in the northern part of the State, about fifty-eight miles west of Chicago. It is on the Chicago Great Western and the Chicago and Northwestern railroads. The chief buildings include the city hall, the public high school, and the Northern Illinois Normal School. Among the manufactures are ironware, furniture, machinery, clothing, shoes, wire, and implements. It was settled in 1838 and incorporated in 1877. Population, 1920, 7,871.

DE KALB, John, Baron, eminent general, born in Alsace, Germany, June 29, 1721; died Aug. 19, 1780. He entered the army of France, rose to the office of brigadier general, and was sent by his government on a secret mission to America in 1768. Silas Deane induced him to join the American forces and he was made major general by Congress. He was sent to reinforce General Lincoln at Charleston in 1780, but did not reach him in ample time. Subsequently he was second commander to General Gates at the Battle of Camden and commanded the troops of Maryland and Delaware. During the resistance of an attack by Cornwallis on Aug. 16, 1780, while leading his forces, he was severely wounded and died three days later. A statue in Annapolis, Md., was erected to his memory.

DE KOVEN (dē-kō'vẹn), **Henry Louis Reginald,** musical composer, born in Middletown, Conn., April 3, 1861. He was taken to Europe when eleven years old and studied at Stuttgart, Paris, and Oxford, and in 1879 graduated from Saint John's College, Oxford. Subsequently he took additional instruction in music at Stuttgart and Frankfort with the view of becoming a professional pianist, but soon after devoted his attention to opera and song writing. Since 1882 he has resided in the United States. Among his best known works are "Robin Hood," "Rob Roy," "Foxy Quiller," "Ask What Thou Wilt," "Three Dragoons," "Don Quixote," and "Maid Marian." He died Jan. 16, 1920.

DELACROIX (dẹ-lȧ-krwä'), **Ferdinand Victor Eugène,** painter, born near Paris, France, April 26, 1799; died Aug. 13, 1863. He began study under Pierre Guérin at the age of eighteen, became highly skilled as a painter, and in 1822 exhibited his first work, "Dante and Virgil." Though the coloring was applied at the expense of accurate drawing, it was much praised by critics. Later he produced a large number of excellent paintings, and became recognized as the leader of the Romantic School. Among his productions are "The Massacre of Chios," "The Death of Marcus Aurelius," "The Capture of Constantinople by the Crusaders," "The Farewell of Romeo and Juliet," "Blind Milton Dictating Paradise Lost," and "Liberty Directing the People on the Barricades." On account of his genius he was styled the Victor Hugo of painting.

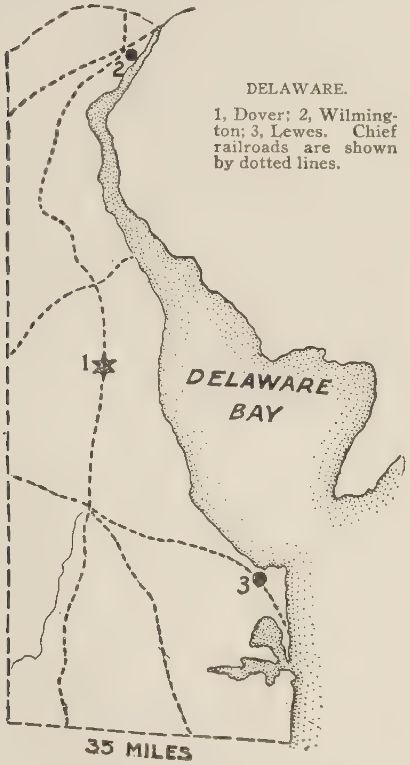
DELAGOA BAY (dĕl-a-gō'ạ), an indentation extending from the Indian Ocean into the coast of Southeastern Africa. It is about forty miles long and from sixteen to twenty miles wide. The Crocodile, Maputa, and other rivers flow into it. At the northern end is the town of Lourenço Marques, one of the chief ports of South Africa. This port is of special importance because it is only 52 miles from the Transvaal and about 350 from Pretoria, with which it is connected by railroads. Delagoa Bay is immediately south of Portuguese South Africa and is under the control of Portugal. The bay is available for vessels of large tonnage, though there are a number of flats and shoals, making navigation quite intricate. In the war between England and the South African republics the bay was a neutral district, and the only one by which the two republics had access to commerce not passing over British territory.

DELAND (dē-lănd'), **Margaretta Wade Campbell,** novelist and poet, born in Allegheny, Pa., Feb. 23, 1857. She attended private schools and studied at Cooper Union, New York City, and engaged in teaching the art of drawing. In 1880 she married L. F. Deland and removed to

Boston. She wrote and published a number of delightful poems and stories. Her books include "Philip and His Wife," "The Wisdom of Fools," "The Story of a Child," "The Common Way," "The Awakening of Helena Richie," and "The Garden, and Other Verses."

DELAROCHE (dę-lȧ-rôsh′), **Hippolyte Paul,** famous painter, born at Paris, France, July 16, 1797; died Nov. 4, 1856. He studied at Paris and first attracted notice in 1824 by his excellent productions, "Saint Vincent de Paul Preaching in the Presence of Louis XIII." and "Joan of Arc Interrogated by Cardinal Beaufort." He is the accredited head of the Eclectic School of art. The treatment accorded his subjects is delicate, the conception picturesque, the coloring pleasing, and the drawing accurate. Among his works are "Princess in the Tower," "Cromwell Contemplating the Corpse of Charles I.," "Bonaparte at Saint Bernard," "Jesus in the Garden of Gethsemane," and "Marie Antoinette before the Revolutionary Tribunal."

DELAWARE (dĕl′ȧ-wâr), a State of the United States, one of the thirteen original states, popularly called the Diamond State. Next to Rhode Island it is the smallest State in the Union. It is bounded on the north by Pennsylvania, east by the Delaware River, Delaware Bay, and the Atlantic, which separate it from New Jersey, and south and west by Maryland. The greatest length from north to south is 95 miles; greatest width, 35 miles; and area, 2,050 square miles. It has a water surface of 90 square miles. Cape Henlopen, opposite Cape May, N. J., projects into Delaware Bay.



DELAWARE.

1, Dover; 2, Wilmington; 3, Lewes. Chief railroads are shown by dotted lines.

Description. The larger part of the State is located in the Atlantic coastal plain and has an elevation of about 50 feet above sea level, but in the extreme north is a small hilly section. The elevations are not more than 280 feet above the sea and are highest near the boundary of Pennsylvania. Much of the southeastern part is characterized by sandy ridges and the region near Delaware Bay contains a number of extensive marshes. Cypress Swamp, in the extreme southern part, has an area of about 75 square miles.

A number of small rivers supply the interior drainage, most of which flow into Delaware River and Delaware Bay, and several flow toward the southwest into Chesapeake Bay. The soil is generally fertile, with forests in the northern and western parts. It has a temperate climate, with ample rainfall and healthful conditions throughout the year. In the extreme south the average annual temperature is about 56° and in the northern part it is about 52°. The lowest winter temperature is about 17° below zero, though this is rare, and the highest in summer ranges from 90° to 103°. The earliest frosts in autumn occur from the 10th to the 15th of October and plants begin to grow the early part of April. A slightly larger rainfall occurs on the coast than in the section inland, but the average for the State ranges between 42 and 48 inches.

Minerals. Situated entirely within the Atlantic coastal plain, the State is underlain by rocks of recent geological formation. Kaolin and a good quality of clay are found in the vicinity of Wilmington, where they are quarried for use in manufacturing. In the vicinity of that city are deposits of granite and some feldspar. A good class of glass sand is widely distributed, and marls and bog iron ore deposits occur in many places. The output of granite is the most important.

Agriculture. Nearly 75 per cent. of the surface is utilized in farms and agriculture ranks as the leading industry. Most of the farms are small, ranging from 50 to 75 acres in extent, and comparatively few have more than 160 acres. The soil is tilled with much care and fertilizers are used very extensively. Corn and wheat are the chief cereals and hay takes third rank in the acreage. Stock raising is a secondary industry, but considerable attention is given to the rearing of horses and to dairy farming. Many large orchards are cultivated, the chief products being apples, peaches, and many varieties of small fruits. Vegetables are grown extensively for the Philadelphia and New York markets. The soil and climate are especially adapted to the cultivation of tomatoes, and about 15,000 acres are planted in that product annually.

MANUFACTURING. The location of Delaware gives it good opportunities in the manufacturing industry, especially in that it has extensive transportation facilities and is located near large markets. Iron and steel products comprise the leading manufactures. The leather industry takes rank as the third in the value of the total output. Canning is an important enterprise, both in fruits and vegetables. Other manufactures embrace machinery, railway cars, steamships, cotton and woolen goods, powder, tile, wagons, and clothing. The oyster and sturgeon fisheries yield large returns, much of the product being canned and cured for export. A small output of wood is obtained for manufacturing in the swampy districts, especially cypress.

TRANSPORTATION. The northern part of the State is crossed from northeast to southwest by two trunk railways, the Pennsylvania and the Baltimore and Ohio, and all parts of the State have convenient railway facilities. The lines in operation aggregate about 350 miles. The Philadelphia and Reading is the principal railway. Many of the highways have been paved. Electric railways are operated to a considerable extent and a canal fourteen miles long connects the Delaware River with Chesapeake Bay. At Lewes, near Cape Henlopen, is an extensive breakwater that cost about $2,225,000. Much of the foreign trade is with Baltimore and New York, though a small per cent. is carried through the port at Wilmington, which is a customs district.

GOVERNMENT. The executive branch is vested in a Governor, who is elected for a term of four years, but is not eligible for a third term. A similar provision governs the election of the Lieutenant Governor, who presides over the Senate. Two houses constitute the legislative department, the Senate of 17 members and the House of Representatives with 35 members. Members of the Senate are chosen for four years and representatives for two years. Six judges constitute the judiciary, one of whom is chief justice and one is chancellor. All the judges are appointed by the Governor for a term of twelve years, subject to confirmation by the Senate. Delaware has one representative in the Lower House of Congress, hence is entitled to three electoral votes.

INHABITANTS. The population is 94 to the square mile. All of the leading religious denominations are represented, including chiefly the Methodist Episcopal, Presbyterian, Baptist, Protestant Episcopal, Roman Catholic and Lutheran. Dover, the capital, is located in the central part of the State. Wilmington, the largest city, is in the northern part, on the Delaware River. Smyrna, New Castle, and Lewes are among the business centers. In 1900 the State had a population of 184,735. This number included a Negro population of 30,687, or 16.6 per cent. Population, 1920, 223,003.

EDUCATION. The system of public schools is based upon a plan adopted in 1875. Support is obtained from direct taxation levied locally and from certain fees and licenses. No normal schools are maintained by the State, but each county has a teachers' institute. Separate schools are maintained for white and colored children. Delaware College, which is open to both sexes, is located at Newark. A college for colored students is maintained at Wilmington and an insane asylum at Farmhurst, and ample provision has been made for the education of the deaf, dumb, and blind.

HISTORY. Delaware was so named from Lord de la Warr, who explored Delaware Bay in 1611. The history of the State is closely linked with the early settlement and development of America. A company of Dutch traders, in 1631, planted a colony near the present site of Lewes. In 1638 a number of Swedes and Finns made the first permanent settlement on the site of Wilmington, where they built Fort Christina. The Swedish claim was under a grant from Sweden. Peter Minuit, a Dutchman, was sent to purchase the land west of the Delaware River, situated between Cape Henlopen and Trenton Falls, from the Indians. The Dutch laid claims to a portion of this district and built Fort Cassimir, and in 1655 secured control of the entire Swedish possessions.

Delaware, together with New York, passed into the hands of England in 1664, and became vested in William Penn by purchase in 1682. In 1693 it was organized as a part of Pennsylvania, but was separated as a distinct colony in 1711. It adopted a constitution as a separate State in 1776, supported the Declaration of Independence in the same year, and in 1787 was the first State to ratify the Federal Constitution. Though holding slaves, it did not secede from the Union at the time of the Civil War, but many of its citizens joined the Confederate army. The Legislature denounced the fourteenth amendment to the Constitution, and an ill feeling prevailed against the negroes for many years after the Civil War. In the development of commerce and industrial enterprises it has made great strides of progress since 1865.

DELAWARE, county seat of Delaware County, Ohio, 23 miles north of Columbus, on the Whitstone (Olentangy) River. It is on the Pennsylvania, the Hocking Valley, and the Cleveland, Cincinnati, Chicago, and Saint Louis railroads. Among the chief buildings are the high school, the courthouse, the public library, and the Ohio Wesleyan University (Methodist). The manufactures embrace shoes, flour, furniture, clay products, rubber tubes, and machinery. Gas and electric lights, waterworks, telephones, and pavements are among the improvements. It was incorporated in 1827. Population, 1900, 7,940; in 1920, 8,756.

DE LA WARE (dẹ lȧ wär), or **De la Warr, Thomas West, Lord,** colonial Governor of Virginia, born in 1577; died June 7, 1618. Little is known of his early life. He came to America and governed the colony with success for two years, beginning in 1609, built forts Henry and Charles, and discovered the Delaware River. On account of ill health he returned to England, but was petitioned to rejoin the colony. He died while on his return voyage and his body was lowered in the sea.

DELAWARE BAY, a large extension from the Atlantic Ocean, separating Delaware from New Jersey. It is about 50 miles long and 27 miles wide, and is important as an avenue of commerce. Besides receiving the waters of the Delaware River, it receives the inflow of the Maurice and other streams. The Delaware River is about four miles wide at the mouth, and the bay at the entrance between Cape May and Cape Henlopen has a width of about thirteen miles. The Federal government constructed an extensive breakwater from the latter point, by which the bay, at Lewes, is made an excellent harbor. It facilitates the safe passage of the largest vessels to Philadelphia and other commercial centers.

DELAWARE RIVER, an important river of the United States. It rises in southern New York, forms a part of the boundary between that State and Pennsylvania, the boundary between the latter State and New Jersey, and a portion of the boundary between Delaware and New Jersey. Its general course is southward, though it makes several bold turns, and it discharges into Delaware Bay. It passes through the Kittatinny Mountains near Stroudsburg, Pa., flowing through the Delaware Water Gap, a place remarkable for its beautiful scenery and rock gorges. Trenton and Philadelphia are the most important commercial centers on the river; the former is at the head of navigation and the latter is at the point reached by the largest vessels. The entire length of the river is about 300 miles. Its principal tributaries are the Schuylkill and the Lehigh. Several canals connect it with the Hudson River. The fisheries, consisting principally of shad, are noted for their commercial value.

DELAWARES (dĕl′á-wârz), an Indian tribe of the Algonquin family. They dwelt originally on the Delaware River and were largely under the control of the Five Nations. William Penn bought a large tract of land from them, and important trade relations were maintained with them by the Swedes, Dutch, and English. Their warriors fought at Braddock's defeat, aided in the war with Pontiac, and assisted the Union in the Civil War. Large numbers were converted to Christianity by the Swedes and Moravians, beginning in 1740. Shortly after the Revolution the tribe emigrated to Ohio, in 1818 to Missouri, in 1829 to Kansas, and in 1868 to Indian Territory (now Oklahoma). The United States granted to them the privileges of citizenship in 1866, divided their money and lands among them, and gave them educational aid. They are well advanced in the industries and professions, own their homes, and fill useful functions in life. At present they number about 1,000. Tammany was among their best known chiefs. His name has been given to an influential political society of New York.

DELAWARE WATER GAP, a narrow gorge in the course of the Delaware River, near Stroudsburg, Pa., on the borders of New Jersey and Pennsylvania. It is a low gap in the Kittatinny Range of the Appalachian Mountains, which rise in abrupt cliffs a height of 1,400 feet above the water. The region has been converted into a popular summer resort and is reached by rail from New York and Philadelphia.

DELBRÜCK (del′brük), **Hans,** statesman and historical writer, born in Bergen, Germany, Nov. 11, 1848. He studied at Heidelberg, Greifswald, and Bonn, and subsequently served in the War of 1870-71. In 1874 he became teacher of Prince Waldemar of Prussia, was elected to the house of delegates in 1882, and to the Reichstag in 1885. He was prosecuted by the government in 1899 for criticising the expulsion of the Danes from Schleswig-Holstein. He is the author of numerous valuable works on history and government, and published the *Prussian Year-Book* and the *Political Weekly.* His books include "Frederick, Napoleon, Moltke," "The Old and New Strategy," "The Prussian War and the Burgundian War," and "The History of the Art of War."

DELBRÜCK, Martin, statesman, born in Berlin, Germany, April 16, 1817; died in 1903. After receiving a liberal education, he practiced law at Halle and became assistant minister of finance. He was made director of commerce and industry in 1859. The successful commercial treaty negotiated by him in 1864 between Prussia, Italy, France, Belgium, and England led to his election as president of the federal chancery. His active efforts aided greatly in organizing the German Empire in 1871, for which he prepared the constitution. He remained an active member of the Reichstag until 1880, when he retired. His efficient and valued service to the empire place him in the front rank of European statesmen of his time. He supported free trade as against the protective policy of Bismarck.

DELCASSÉ (dĕl-kȧ-sȧ′), **Théophile,** statesman, born in Pamiers, France, in 1852; died Feb. 22, 1923. He studied in Paris, and entered the government service. In 1894 he was appointed undersecretary and minister of the colonies, and served as foreign minister in several cabinets. He represented the French government in settling the differences between that country and England in regard to the occupation of Fashoda. In 1899 he served as a mediator between Spain and the United States, took part in the negotiations that followed the Boxer uprising in China in 1900, and successfully promoted a treaty between France and

Great Britain in 1904. He was made a member of the Legion of Honor in 1887.

DELFT (dĕlft), a city of Holland, on the Schie River, about six miles southeast of The Hague. It is important as a commercial center, being situated on a number of railways and intersected by numerous canals. A Gothic church, called the Oude Kerk, dates from the 15th century. Another Gothic church, the Nieuwe Kerk, has a tower 375 feet high and contains 500 bells. William I. of Orange was assassinated in the Prinsenhof, which now serves as a museum. Among the educational institutions is a polytechnical school with an attendance of 700 students. The manufactures include delftware, a celebrated kind of earthenware, carpets, ammunition, soap, and cotton and woolen goods. Electric lights, waterworks, and extensive electric railway lines are among the public utilities. Population, 1923, 18,260.

DELHI (dĕl′hī̇), a city in the Punjab district of India, on the Jumna River, about 830 miles northwest of Calcutta. Solid stone walls secure three sides, through which entrance to the city is effected by ten gates, the other side being protected by the water front. The site of the city is on a high eminence, being clean and healthful, and it has important railroad connections with the principal commercial centers of India and Southern Asia. The former extent of this metropolis is marked by vast ruins of gardens, pavilions, palaces, and mausoleums. Among the noteworthy buildings is the celebrated Shah Jehan palace, commenced in 1631, located in the eastern part of the city. It has a length of 3,200 feet and a breadth of 1,600 feet. Its carvings and decorations are among the finest in the world. The Great Mosque, or Jamma Musjid, is a famous structure after the Byzantine-Arabic style, erected in the 17th century by Emperor Shah Jehan. Another structure of note is the Minar, built in the 13th century, containing pillars 48 feet in diameter at the bottom and 10 feet at the top, with a height of 240 feet. Numerous inscriptions from the Koran and fine fresco work adorn the winding staircases and the walls. The city has been improved greatly within recent decades. It has broad streets, electric lights, and street railways, and is noted as an extensive wheat market. Its bazaars are famous for trading in fabrics, precious stones, and gold and silver work. A public school system is maintained and a government college, founded in 1792, constitutes a center of higher learning. It has a number of Protestant churches, government buildings, and numerous Eastern places of worship.

Delhi was formerly the largest city of Hindustan and for some years was the capital of the Afghans, but subsequently became a part of the Mongol Empire. In 1803 it was made a part of the territory of the British, who have controlled it since that time, except for a brief period during the Sepoy mutiny of 1857. More than one-half of the population are Hindus. Population, 1922, 239,468.

DELIRIUM TREMENS (dē̇-lĭr′ĭ-ŭm trĕ′-mĕnz), a derangement of the mind attended by extreme nervous agitation and hallucinations, due chiefly to the excessive use of alcoholic liquors. The disease is most prevalent among spasmodic drunkards, the principal symptoms being delirium and trembling. The former is constantly present, while the latter is not perceptible in many instances. At certain stages the sufferer is impressed by seeming to see frightful and extraordinary objects, during which he suffers great fear and mental agitation, which put him in a state of extreme terror. Total abstinence, rest, and wholesome nourishment are the chief requirements in the immediate treatment.

DE LONG (dē̇ lŏng′), **George Washington,** explorer, born in New York City, Aug. 22, 1844; died in Siberia, Asia, Oct. 30, 1881. After securing an education in the public schools of Brooklyn, he was appointed midshipman in 1861, and in 1865 graduated at the United States Military Academy. He became master in 1868, and was promoted to the rank of lieutenant commander in 1879. James Gordon Bennett purchased and fitted out the *Jeannette* for a polar exploration in 1879, equipping it for a three years' Arctic voyage. De Long became commander of this vessel and sailed from San Francisco, July 8, 1879, by way of Bering Strait, in search of the North Pole. After cruising through the polar seas, the vessel was crushed by ice and sunk on June 13, 1881. In October of the same year De Long with some of his party perished on the banks of the Lena River, in Siberia.

DELOS (dē′lŏs), the smallest island of the Cyclades, in the Grecian Archipelago, with an area of about twelve square miles. The surface is a rugged mass of granite, and near its center the rocky peak of Mount Cynthus rises to a height of 350 feet above sea level. The island is celebrated in the song, myth, and history of Greece. Myths make it the scene of the birth of Apollo and Artemis, and, though once a floating mass, it was fixed to the bottom of the sea by Zeus that it might become celebrated by the birth of these noted personages. It was the scene of a festival to Apollo, at which the Greeks from many nations gathered. In 477 B. C. the Confederacy of Delos was formed with Athens at its head, the name being derived from the meeting of its deputies at the temple of Apollo, in which the treasures of the confederation were stored. Delos became a commercial center after the fall of Corinth in 146 B. C., and was famed for its favorite markets and fine harbors. Excellent palm groves grew in its public places, and brazen vessels abounded in vast numbers. In the year 87 B. C. it was laid waste by the Mithridatic War. At present brushwood is quite common and small fields of corn are cultivated by the natives.

DELPHI (dĕl′fī), a celebrated town of ancient Greece, in the territory of Phocis, noted principally on account of the most important temple and oracle of Apollo. Its location was about six miles from the Corinthian Gulf, hemmed in on the north by the wall-like cliffs of Mount Parnassus, on the south by Mount Cirphis, and on the east by smaller ridges. The Plistus flowed from east to west and drained the region of its surplus waters. The site of the ancient town is occupied at present by the village of Castri. The main point of interest still remains distinguishable, though it was somewhat altered by an earthquake in 1870.

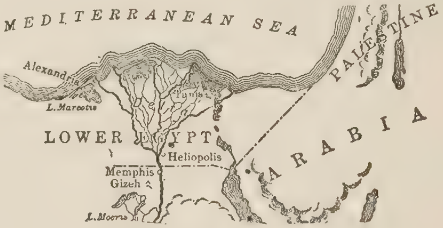
Delphi was noted as the meeting place of the Amphictyonic Council and near it the Pythian games were held. The celebrated oracles were delivered by a priestess, who occupied a tripod over an opening in the ground, from which came intoxicating vapors accompanied by the inspiration of the Delphian god. The replies that came from the oracle were quite obscure and dual in meaning, but served in the regulation and support of the political, civil, and religious autonomy of the Greeks. These oracles grew in fame from the 9th century B. C. until they were abolished, long after the Christian era, by Emperor Theodosius. The temple of Apollo was destroyed, but rebuilt, and added to at various times. The last structure was built in the 5th century B. C., which was the most beautiful and magnificent, costing 300 talents, about $575,000. In it were statues by the great sculptors of Greece, and it was decorated by paintings of the foremost masters of the Grecian art. In the times of Pliny, Delphi contained more than 3,000 statues, and a golden cast of Apollo stood within the temple. It was plundered at various times, but principally by Nero and Constantine.

DELPHOS (dĕl′fŏs), a city of Ohio, in Allen County, fifteen miles northwest of Lima, on the Pennsylvania, the Akron, Canton and Youngstown, and other railroads. It is finely located on the Miami and Erie Canal and is surrounded by a farming section. Mineral oil is obtained in the vicinity. The manufactures include lumber products, machinery, and farming implements. It has a system of waterworks, electric lights, and several fine school buildings. The first settlement on its site was made in 1834 and it was incorporated in 1851. Population, 1900, 4,517; in 1920, 5,145.

DELSARTE (dĕl-särt′), **François Alexandre,** teacher of elocution, born in Solesmes, France, Dec. 19, 1811; died July 19, 1871. His early study was for the stage, but he devoted himself to instruction in elocution on account of a failure of his voice. He studied to found and elaborate a system by which to reduce human expression to a science. After years of careful application he perfected his system of physical culture, known as the Delsarte System. Singular success made him the center of a school and caused him to be the recipient of many honors.

DELSARTE SYSTEM, the name applied to a method of general physical culture now highly popular in America and Europe. It has been adopted in the schools of many cities, in colleges, and in private institutions, and is largely employed in regular courses of instruction. The originator, François A. Delsarte, asserted that every outward manifestation is the expression of an inner state. He classed the head as the *mental* organ, the trunk as the *emotional* organ, and the limbs as the *primary vital* organs. The mental movements proceed toward the center, the normal around the center, and the vital from the center. In general the laws of force, rhythm, direction, reaction, succession, velocity, and opposition should govern bodily movements. The influence of systematic application has been efficient in developing the high quality of orators, dramatists, and elocutionists, giving them a fine quality of vocal utterance, gesture, and expression in accordance with the higher art of elocution. Besides the effect upon physical development, it has had a wholesome influence upon delivery and expression.

DELTA (dĕl′tȧ), the name of the Greek letter which corresponds to the letter D. The term was applied to the deposits of silt at the mouth of the Nile, on account of its resemblance to that letter. Since then the same name has been given to the alluvial tracts deposited by many of the great rivers, the waters of which flow into the sea by two or more branches. Deltas occur only where the mouth of a river is sheltered from the ocean and the tides and oceanic currents are weak, or in inland lakes and seas where the movement of tides and ocean currents are entirely absent. The delta of the Mississippi is the largest in America. It has an area of 12,300 square miles, two-thirds of which is permanently above water, while the remaining portion is a sea marsh. It begins a short distance south of the confluence of the Red River and extends far into the Gulf of Mexico. The delta of the Nile, which has its outlet into the Mediterranean, has an area of about 9,000 square miles, and is enlarging continually by the sediments deposited annually, which are carried from inundated regions. The



DELTA OF THE NILE.

delta of the Ganges and the Brahmaputra, in the Bay of Bengal, exceeds the size of the delta of the Nile. Countless islands have been formed by the deposits and numerous streams wind their way among them in various directions. Among the most important deltas of Europe are those of the Po, Rhone, and Rhine; in Africa, those of the Nile, Zambezi, and Senegal; in Asia, those of the Ganges, Brahmaputra, Euphrates, Indus, Yang-tse-Kiang, and Hwang-ho.

DELUGE (dĕl′ûj), a flood or torrent of water, lava, fire, or melted stone. The name is applied in particular to the flood mentioned in Genesis vi-ix. This remarkable flood was predicted by Noah and is generally credited to the year 2348 B. C. There are various stories of vast floods similar to those mentioned in the Bible. They have been handed down from remote antiquity by various races. In the Hindu story the god Vishnu is represented as giving warning to Prince Satyavarata of an approaching flood, and a vessel was furnished to him in which he and a number of others were saved. The person told of in the Chaldaean history as surviving a flood is Xisuthros, who was carried by a ship over a deluge which is said to have lasted seven days, and he, like Noah, is said to have sent birds out for the purpose of ascertaining whether the flood had subsided. The people who lived prior to the flood of Noah are usually spoken of as antediluvians.

DEMETRIUS (dē̇-mē′trĭ-ŭs) **I.**, called Poliorcetes, King of Macedonia, born about 338 B. C.; died in 283 B. C. He was a son of Antigonus, King of Asia, and fought with his father against Ptolemy of Egypt in Syria. In 307 B. C. he captured Athens from Cassander, and soon after defeated Ptolemy in a naval battle near Cyprus. In 305 B. C. he laid siege to Rhodes, but failed to take the city, and four years later he was defeated at the Battle of Ipsus in Phrygia, causing him to lose his possessions in Greece. He seized the throne of Macedonia in 294 B. C., but was driven out by Pyrrhus and subsequently surrendered to Seleucus, who kept him a prisoner the remainder of his life.

DE MILLE (dē̇ mĭl), **James**, author, born at Saint John, New Brunswick, in 1837; died Jan. 28, 1880. He graduated at Brown University in 1854, where he wrote a number of popular college songs. In 1860 he was made professor of classics in Arcadia College, Nova Scotia, and was professor of rhetoric and history at Dalhouse College, Halifax, in 1865-80. His stories of adventure take high rank in the literature of Canada. Among his books are "Lost in the Fog," "The Arkansas Ranger," "The Lady of the Ice," "The American Baron," "The Soldier and the Spy," "The Living Link," "Andy O'Harra," and "A Castle in Spain."

DEMOCRACY (dē̇-mŏk′rȧ-sy̆), that form of government in which the ruling power or the principle of sovereignty is exercised by the people. It first existed in Greece, where it was advocated by Pericles, and is mentioned in the writings of Herodotus and Aristotle. The result of experience in government for ages has demonstrated that public virtue and good intention are most likely to abound where the people have a voice in making and executing the law. The people as a whole generally mean to be just and do right, and are, as a rule, possessed of a degree of patriotism and public spirit. A pure democracy is impracticable in a large and populous country, but its principles may be embodied in a representative form. In such a government the people are represented by the voters, whose qualifications to vote are generally defined in a constitution called the fundamental law of the nation.

DEMOCRATIC PARTY (dĕm-ō̇-krăt′ĭk), one of the most important political parties of America, having been in continual existence for more than a hundred years. The rise of such a party in the nation under the new Constitution was natural. In the minds of most Americans the love of individual liberty was native, rather than the desire for a strong central government. Those who felt this need most strongly were naturally quite likely to look with apprehension upon the possibility of its being encroached upon by the Federal government. For this reason they advocated a strict construction of the Constitution and states' rights. These elements of political thought drew the Anti-Federalists together in 1788, and party feeling was further extended by the strong sympathy of many Americans with the French revolution. The view that the government should extend aid to France in its contest with England greatly quickened the public pulse. Thomas Jefferson put himself at the head of the party drawn together by agreement in these views and led the opposition to the Federalists. The party became known as the Democratic-Republican, which is still its official title. Its members were commonly called Republicans before Monroe's administration and since then most commonly Democrats.

The party was in opposition to the administration from its origin in 1792 to 1801, and from the first was strongest in the Southern States. With the election of Jefferson in 1800 it came into power. Among the chief tenets of the party was belief in the freedom of speech, of the press, of religion, of politics; in economical government, popular rule, hospitality to immigrants, and the avoidance of foreign complications. The Federalist party went out of existence after the War of 1812 and the Democratic party came into the chief possession of the field. Later questions regarding commercial revenues, free trade, national banks, and other nationalizing measures divided the party and caused the organization of the Whigs. In 1829 Andrew Jackson led a new element into the party and gave to it the popular character under an enlargement of suffrage. From this time it won every presidential election but two until 1860, when it was divided regarding the slavery question. The Southern leaders advocated slavery, while the Northern portion favored preserving the Union, thus making it possible for the newly organized Republican party to elect its President.

Among the important measures obtained during the Democratic administrations may be named legislation favorable to agricultural interests; the purchase of Louisiana, Florida, and the Gadsden tract; and the enlargement of the commercial influence of the nation. It promulgated the Monroe Doctrine. The Democratic party carried the nation through the War of 1812, the Mexican War, and the World War, annexed Texas, discontinued the United States bank, widened civil service reform, and established the Federal reserve banks. Its differences from the Republicans at present are those relating to a tariff revenue, those in opposition to a large standing army, those relating to conquests in foreign countries, and the organization of the national system of finance. It advocates legislation to encourage and protect agriculture and other basic industries, strict adherence to the merit system in civil service, an opposing policy to trusts controlling productions and prices, and the public ownership of various institutions of public utility. The presidents elected by the party, or representing Democratic views, include Thomas Jefferson, James Madison, James Monroe, John Quincy Adams, Andrew Jackson, Martin Van Buren, James K. Polk, Franklin Pierce, James Buchanan, Grover Cleveland, and Woodrow Wilson. They represent administrations which cover a total of 64 years.

DEMOCRITUS (de-mŏc′ri-tus), illustrious Greek philosopher, born in Thrace about 460 B. C.; died about 361. Little is known of his life, though it is certain that he was the most learned thinker of his age and possessed a high reputation for moral worth. His style was praised by Cicero and imitated by Pyrrho. Most of his mathematical, musical, and physical works extant were collected by Mullach, a German writer of Berlin, in 1843. He advocated the mechanical or atomical theory of Leucippus, his teacher. He assumed that particles or atoms constitute the elementary ground of nature, and that these are indivisible and in eternal motion. While he admitted the presence of law in nature, he did not acknowledge that of design. His writings contain noble thoughts concerning order, law, justice, and the duties of rulers. He looked upon an inward peace of heart and conscience as the highest good, and regarded it the end and aim of all virtuous endeavor.

DEMON (dē′mŏn), a name applied anciently to a spirit or immaterial being of supernatural powers, supposed to hold a middle place between men and the celestial deities. The ancient Greeks regarded demons in the same light that Christians look upon angels, but the name is now applied to an evil spirit or a fiend. Evil spirits are termed demons in the New Testament, but in making translations the name has come to be displaced by the word *devil. Demonology,* that branch of the science of religion which relates to demons, is obscured in the treatises of old writers in that the sources of information are related wholly to the civilized nations, instead of at least in part to the primitive and barbarous tribes. Ideas of demons still prevail to some extent even in civilized life, as is evident by the so-called spirit manifestations of modern times.

DE MONTS (deh môn), **Pierre du Gast, Sieur,** Viceroy of New France. He was a wealthy Huguenot and was commissioned to settle and rule the region of North America extending from Cape May to Quebec. In 1604 he settled a colony in Arcadia, near the present borders of Maine and New Brunswick, which he removed the next year to Port Royal, now Annapolis, Nova Scotia. Early the next autumn he returned to France, leaving Champlain and Pont-Greve to explore the country. The colony was abandoned in 1607, and the following year settlements were begun at Quebec and Montreal. However, the fortune of De Monts was so reduced that he was compelled to abandon his scheme of further colonization.

DEMOSTHENES (dē-mŏs′thē-nēz), famous orator of ancient Greece, born about 382 B. C.; died by his own hand in 322. He was the son of a wealthy sword cutler of Athens, who died early, leaving the care of his children and fortune to three guardians, but they greatly abused their trust. At the age of seventeen Demosthenes conducted a suit against them himself and gained his cause, though much of his wealth had been lost. He was nervous, had an impediment in his speech, a tuneless and harsh voice, and ungraceful action. For the purpose of overcoming these defects and strengthening his lungs, he exercised much personal care and exertion. By climbing steep hills his lungs were strengthened, and his voice was cultured by reciting and declaiming on the shores of the sea amid the sounds of roaring waves. His gestures were improved by studying effects before a mirror, and his delivery was improved under the instruction of Satyrus. By means of studious attention, close application, and prolonged exertion he was able to partially overcome feebleness of health and to lay a foundation for skilled oratory and large personal influence. His resolution was early fixed to master the law and politics of his country, for which purpose he labored with a perseverance almost unparalleled. For some time he busied himself as a logographer or speech writer, and by means of this occupation he secured sufficient means to devote the remainder of his life to politics.

Demosthenes appeared in public affairs at about the age of twenty-eight years, from which time until his death the history of Athens is largely linked with the story of his own life. The Grecian states had sunk into divided districts and had become weak. Their weakness and unorganized condition led Philip of Macedon to encroach upon their common liberties. Demosthenes spent the first ten years of his public life in warning his countrymen against the dangers of division and urged them to unite their forces against the common enemy. His celebrated speeches known as the *Olynthiacs* were delivered when Philip made his attack on the state of Olynthus, and these were followed by his great *Philippics* against Philip himself. He was present to witness the Battle of Chaeronea, in which the Athenians and Boetians were defeated and Grecian liberty was crushed. His next endeavor was to cause a general rising against the Macedonians, but his countrymen were slow in heeding his instruction, and were shortly after obliged to sue for peace.

Demosthenes escaped with difficulty from falling into the hands of the conqueror. His famous oration, *On the Crown,* delivered in 330, was a defense of his whole political life. He was imprisoned in 324 on a charge of having received a bribe from one of Alexander's generals and was condemned, but found safety by escaping into exile. It is thought that the charge was unfounded and instigated by his political enemies, led by Aeschines, the opposing orator of Demosthenes. Shortly after the death of Alexander he was recalled to lead an attempt to secure freedom from the Macedonians, but the scheme proved unsuccessful and the army of Athens was crushed in the Battle of Crannon by Antipater. He fled and sought safety in the temple of Poseidon, in the island of Calauria, but poisoned himself to escape arrest. Modern scholars consider the character of Demosthenes almost spotless. He is pronounced the most perfect of orators by Cicero, and his ability in oratory ranks as high as that of Homer in poetry. His speech was vigorous, concise, and natural, and under his leadership Greek prose attained a degree of perfection never before reached. There are sixty-one orations extant that are attributed to him, though some of these are probably not genuine.

DEMURRER (dê-mûr'rẽr), in law, a suspension of the proceedings in a cause until some point is determined by the court. A demurrer is a plea filed to a petition, answer, or reply, and raises a question as to the sufficiency of the case as stated by the opposite party, or some particular part thereof. Only questions of law are raised by a demurrer, which are tried by the court. When a demurrer is sustained, the effect is to lay the pleadings demurred to out of the case, unless the petition is so amended as to avoid grounds on which the court sustains the demurrer.

DENARIUS (dê-nā'rĭ-ŭs), a silver coin used by the Romans. Originally it contained ten and later sixteen of the monetary denomination called *as,* which was a small copper or bronze coin. It had a monetary value equal to about fourteen cents of the money used in Canada and the United States. The gold *denarius* was equivalent to twenty-five silver *denarii.*

DENBY, Edwin, public man, born at Evansville, Ind., Feb. 18, 1870; died Feb. 8, 1929. For several years he lived in China, where his father was United States minister. In 1896 he was admitted to the bar and soon began a successful law practice at Detroit. During the Spanish-American War he served in the navy and later was a member of Congress for two terms, from 1905 to 1911. In 1921 he entered the cabinet of President Harding as Secretary of the Navy, succeeding Josephus Daniels in that office.

DENIS (dĕn'ĭs), **Saint,** the traditional apostle of France and first bishop of Paris. He was sent from Rome about 250 A. D. to preach the gospel to the Gauls and after some detentions reached Paris, where he caused numerous conversions. He and two other Christians were ordered before the Roman governor and tortured to renounce their faith, and, refusing to do so, they were beheaded about 290.

DENISON (dĕn'ĭ-s'n), a city of Texas, in Grayson County, situated near the northern boundary of the State. It is on the Saint Louis and San Francisco, the Kansas City Southern, the Texas and Pacific, and other railroads. The noteworthy features include the Washington School, the public library, and the Saint Xavier's Academy. Among the manufactures are ice, ironware, canned goods, earthenware, and machinery. It has systems of electric lighting, sewerage, waterworks, and street pavements. The vicinity was settled in 1872 and the city was chartered in 1891. Population, 1900, 11,807; in 1920, 17,065.

DENMARK (dĕn'märk), a kingdom in the northwestern part of Europe, including the peninsula of Jutland and an archipelago lying east, and comprising among others the islands of Laaland, Zealand, Falster, Fünen, Samsö, Lessö, Langeland, Aerö, Bornholm, and Moen. It is bounded on the north and west by the North Sea; east by the Cattegat, the Sound, and the Baltic Sea; and on the west by Germany. A part of the northern shore is on the Skager-Rak. The area, including the Faroe Islands and the islands of the Baltic Sea, is 15,592 square miles. Nearly the entire country is surrounded by the sea, the peninsula of Jutland being connected with the continent by a narrow neck of land which is less than forty miles wide.

Description. The North Sea washes the northwestern coast, which is low and cut up by bays, but the eastern coast is slightly more elevated and indented by a series of fjords. Limfjord, in the northern part of Jutland, extends across the peninsula from the Cattegat to the North Sea. The interior of Jutland is crossed by a ridge of hills, extending from the southern frontier to the Limfjord, and forming the watershed between the Cattegat and the North Sea. Guden Aa, the largest river of Denmark, has a length of 100 miles and flows into the Cattegat. About eighty per cent. of the soil is productive, the surface having no elevations higher than 600 feet above sea level. The coast is largely uninhabitable on account of drift sands that form a narrow line of unproductive flats called klitter.

Formerly Denmark had extensive forests of pine and fir, but these trees are now confined chiefly to cultivated lands. The fir was the prevailing tree in former ages, but now the oak and the beech are the most numerous. Other trees in the forests include the aspen, ash, elm, birch, willow, and pine, the last mentioned having been planted to some extent in the marshy and sandy districts. At Copenhagen the mean temperature is about 60° in summer and 32° in winter, and the islands have a somewhat milder climate than that of Jutland. Mists are frequent in summer and heavy rains occur in autumn. Aquatic birds are numerous, and salmon, oysters, and herring abound in the waters off the coast. The climatic conditions are temperate and favorable to health and commercial activity, owing largely to the modifying influence of sea breezes.

AGRICULTURE. Much of the land is divided into small holdings and the system of tenure is largely peasant proprietorship. The importance of agriculture is constantly increasing, owing to the remarkable care and skill exercised in maintaining fertility and redeeming waste and unproductive lands. Dairy farming is the chief source of profit; the production of milk, butter, and cheese greatly exceeds the home consumption of these products. The coöperative plan is used in fostering the dairy industry as well as some departments of general farming. Oats, rye, barley, and wheat are the principal crops. Potatoes and beet roots are grown extensively. The culture of fruits and small gardening receive much attention. Cattle are raised chiefly for dairying purposes. Other live stock grown extensively include sheep, horses, and swine.

MANUFACTURING. Denmark has few mineral deposits, hence its manufacturing enterprises are conducted chiefly on a small scale. Salt, gypsum, and coal are found to a limited extent, though the output of the last mentioned is not sufficient to supply the demand of the industries. Copenhagen is the chief manufacturing center and is noted for its output of porcelain, locomotives, and spirituous liquors. Other manufactures include sugar, pottery, cotton and woolen fabrics, boilers, leather goods, and machinery. Iron smelting is carried on to some extent and fish and oyster canning is a productive industry.

TRANSPORTATION AND COMMERCE. All parts of Denmark have convenient railroad facilities, the lines aggregating about 2,450 miles, most of which are under government ownership and control. The chief commercial centers are located on the coast or navigable streams, or are connected by a network of canals. Telegraph and telephone lines furnish communication facilities with all urban and interurban points. The imports exceed the exports. At present the principal trade is with Germany, Great Britain, the United States, Sweden, and Russia in the order named.

EDUCATION. An excellent system of public schools is maintained. Attendance is compulsory from the age of seven to fourteen years. Practically the entire adult population has been educated in the elements of learning, while a large per cent. has enjoyed the benefits of higher education. The public schools, colleges, and universities under state or municipal control are maintained by public taxation. Schools for instruction in the industries and agricultural arts in the provinces are liberally attended. Hulberg Academy at Sorö and the splendid university of Copenhagen are the chief institutions of higher learning.

INHABITANTS. The people of Denmark are almost exclusively Danes, including only a small per cent. of Jews and others. They are a Teutonic people of the Scandinavian group, and are characterized by a light complexion, blue eyes, and light brown or chestnut hair. Lutheran is the state religion and is the faith of nearly the entire populace, though religious liberty is extended to all. Copenhagen, the capital and largest city, is located on the island of Zealand, on the Sound. Other cities of importance include Aalborg, Aarhuus, Frederiksberg, Odense, Randers, Horsens, and Fredericia. Population, 1906, 2,605,268; in 1921, 3,267,831.

GOVERNMENT. The government is a constitutional monarchy. Legislative authority is vested in the national legislature or *Rigsdag* which is composed of the upper house, or *Landsthing*, and the lower house, or *Folkething*. At present there are 66 members in the Landsthing and 114 deputies in the Folkething. The king is the chief executive and has power to veto bills. He is assisted by the eight ministers of finance, foreign affairs, interior, navy, justice, war, public instruction and worship, and agriculture. The supreme court of twenty-four judges is the highest judiciary, under which justice is administered by the courts of appeal and the officials in rural communities. The nominal war footing is 60,000 men and a standing army of 10,000 men is maintained. Its navy serves only for purposes of coast defense.

COLONIES. The foreign possessions of Denmark embrace Greenland and Iceland. The Danish West Indies were sold to the United States in 1917 for $25,000,000. These colonies have a total area of 87,614 square miles and a population of 121,500. The colonial trade is chiefly with the mother country, and Iceland is the most important colonial possession.

Language and Literature. The Danish language is a branch of the Scandinavian division of the Germanic family of languages, and is closely associated with the Swedish and Norwegian. It was modified by the addition of foreign words in the 11th century, particularly by the introduction of Anglo-Saxon terms, and in the 18th century it was again affected by the extension of German culture. As a whole it may be classed as the most modern of the Scandinavian tongues, being influenced more largely by foreign elements than either the Icelandic or Swedish, and, as a whole, is soft and monotonous, making some of the sounds quite difficult for foreign students to learn. Both the German and Roman characters are used in writing, and the language as a whole had a large modifying influence on the spoken language of Norway, owing to the fact that these countries were long united for governmental purposes. The literature dates from about the 12th century, when the codes of the ancient kings were collected, and many of the songs and ballads of the Scandinavian Sagas were incorporated with local folklore and short poetic productions. Christian Pedersen (1480-1554) translated the New Testament into the Danish at the time of the Reformation, and later published the complete Bible and various treatises written by Luther. Ludvig Holberg (1684-1754) founded the Copenhagen Theater and not only wrote poems and plays, but induced interest in other writers. He may be regarded the founder of the Danish stage, and from his time dates the modern period of Danish literature. His several writings include "Arabian Powder," "The Pewter Statesmen," and "History of Denmark."

Johannes Evald, a writer of considerable note, wrote the national song, "King Christian at the High Mast Stands," and several plays, including "Harlequin Patriot" and "Baldur's Death." Jens Baggesen holds first place among the song writers; Peder Andres Heiberg, among the comic dramatists, and Adam Oehlenschläger (1779-1850) is the most celebrated poet of the last century. The latter adapted many of the interesting details in the mythology of Scandinavia and was the means of bringing the tales of the Edda and the old Norse heroes to the favorable attention of the stage. Adolf Wilhelm Schack Staffeldt (1770-1826) was a contemporary of the former, and took first rank as a lyric poet, while Bernhard Ingemann produced lyric poetry and dramatic works of value.

Hans Christian Andersen ranks among the most famous Danish novelists. His works are largely in the form of short fairy tales, but they are charming to a large class of readers, and have been widely translated. Steen Blicher (died, 1848) is a novelist of note, and his writings are popular because of the beauty with which he describes the customs and characteristics of the people of Jutland. Carl Edvard Brandes (born, 1847), one of the leading recent writers, is the author of "The Remedy" and "Under the Law." Many Danish writers have contributed much of value to the general store of history, astronomy, mathematics, geography, and music.

History. The history of Denmark dates back to the remote past, when the Saga heroes were noted for daring voyages and deeds of bravery in defense of their country. The oldest inhabitants of which we know were the Cimbri, who joined the Teutons and brought terror to Rome by successive invasions of the provinces of Gaul. Later the Angles, Saxons, and Jutes invaded and conquered England, while the Danes came from Zealand to take their places. Denmark was divided into a large number of small provinces for some time, but, invaded by the Franks and preyed upon by the famous vikings, the people were at last driven to the necessity of forming a united federation as a better means of defense. Later Gorm the Old united the islands and mainland under one dominion and opposed the advance of Christianity begun by the preceding rulers, though he greatly strengthened the general government.

Sweyn, grandson of Gorm the Old, began the conquest of Norway and England, which was accomplished by his son, Canute. His successor lost England in 1042 and Norway in 1047, and his reign was further weakened by the growth of the feudal system, by which the poorer class of people were reduced to serfdom. Norway was conquered by Waldemar I. and Waldemar II. made advances upon Germany, though these were lost under his successor. Queen Margaret ascended the throne in 1387 and established the Union of Calmar ten years later, by which Denmark, Norway, and Sweden became united and were governed with marked success. Under the rule of Christian I. Schleswig and Holstein were united with the other three, but in the time of Christian II. Sweden obtained its independence, and under Frederick I., who ruled ten years, beginning in 1523, Sweden was permanently separated from Denmark, while under Christian IV., Denmark took part in the Thirty Years' War and became involved in two unfortunate wars with Sweden.

The peasants asserted their rights in the latter part of the 17th century, and became free from serfdom at the beginning of the 18th. The British fleet bombarded Copenhagen and destroyed the Spanish fleet April 2, 1801. To avoid an alliance with France a second fleet was sent by the British in 1807, who demanded a defensive alliance or the surrender of the Danish fleet, which resulted in a second bombardment of the capital. Denmark was in the hands of Napoleon from that time until 1814, when it was forced to cede Helgoland to England in exchange for the Danish West Indies, and Norway passed over to Sweden. The German Confederation, headed by Prussia and Austria, in 1864 obtained the cession of Holstein, Lauenburg, and Schleswig.

Since 1864 the country has enjoyed a period of peace, its people being contented and the national conditions decidedly prosperous. Christian IX. succeeded to the throne in 1863, after the death of Christian VIII., and his reign of 43 years witnessed the material growth of Denmark in national and commercial importance. Through the marriage of his children, the reigning family became related with the sovereigns of many countries of Europe. He died in 1906 and was succeeded by his son, Frederick VIII. The latter died in 1912 and was succeeded by his eldest son, Christian X. Schleswig was annexed in 1920 as the result of a plebiscite.

DENNISON, William, statesman, born in Cincinnati, Ohio, Nov. 23, 1815; died in Columbus, June 15, 1882. He received a common school education, graduated at Miami College in 1835, was admitted to the bar, and became a member of the Legislature in 1848. In 1860 he was elected Governor of Ohio as a Republican, and later he served two years as Postmaster General, beginning in 1864. In the Civil War he gave active support to the Union, raised a large number of troops, and after the war served as President of the Columbus and Xenia Railroad. His generosity was extended to the Dennison (Denison) University, an institution located at Granville, Ohio. This institution has an annual income of $35,000, is attended by 500 students, and has a library of 10,000 volumes. It is open to the instruction of men only, but is affiliated with Granville Academy and Shepardson College, the latter being a school for women.

DENSITY (dĕn′sĭ-tȳ), that quality of a body which depends upon the close cohesion of its constituents. It is estimated by the proportion which the bulk bears to the weight. Thus, in two bodies of equal bulk, but differing in weight, the body of greater weight is also of greater density. In two bodies of equal bulk, but of different density, the body which is of greater density contains the proportionately greater amount of matter. In the case of two bodies containing the same quantity of matter, but differing in bulk, the greater density is ascribed to the one which is of less bulk; from this it is seen that the density is directly proportional to the quantity of matter and inversely proportional to the bulk. By a study of astronomy and the laws of gravitation the datum for ascertaining the density of the earth has been secured, which is now assumed to be about five times that of water. Since the surface consists chiefly of oxygen, it has been suggested that the nucleus may be largely of metals. The density of gases, fluids, and solids, as compared with that of water, is their *specific gravity.*

DENTIST (dĕn′tĭst), one engaged in the profession of cleaning, extracting, or repairing the teeth, or replacing them with artificial ones when necessary. Dentistry rose to a profession in the last century. The work now done by a dentist was largely in the hands of physicians prior to that time. The first institution founded in America to further knowledge in this profession is the College of Dental Surgery, Baltimore, which was chartered in 1839. Since then other excellent schools devoted to this branch of knowledge have been founded in the large cities, numerous periodicals are published in its interest, and many dental societies are maintained in Canada and the United States.

In dentistry there are two distinct departments —*mechanical dentistry* and *dental surgery.* The former is concerned with the artificial substitution of lost teeth, while the latter requires an extended medical knowledge of the diseases of the teeth and the general system, and of the effects upon the body resulting from operations on and treatment of the teeth. The chief operations involved in dental surgery are scaling the tartar, regulating displaced and overcrowding teeth, filling the hollows of decaying teeth, and extracting teeth that are decayed to such an extent as not to warrant filling. Crown and bridge work are done largely by the use of gold, but shell crowns and porcelain are used to some extent. Tin and platinum were employed for filling broken or decayed teeth in the early history of dentistry, but now *amalgams* have come into general use. They are made by a combination of one or more metals with mercury.

DENVER (dĕn′vẽr), an important city of the United States, capital of Colorado. It is situated at the junction of Cherry Creek and the South Platte River, 1,025 miles west of Chicago and 1,456 east of San Francisco. It is the converging center of many trunk railways, which afford transportation facilities in all directions, and has an extensive system of urban and interurban electric lines. Among the principal railroads are the Union Pacific, the Denver and Rio Grande, the Missouri Pacific, the Chicago, Burlington and Quincy, the Atchison, Topeka and Sante Fé, the Chicago, Rock Island and Pacific, and the Colorado Southern.

The site is on a level plain located 5,250 feet above the level of the sea and about twelve miles from the foothills of the Rocky Mountains. It is noted as a healthful city, owing to its clear air and dry climate, and is a favorite center for the residence of retired and wealthy people. The atmosphere is remarkable for its clearness, owing to which many of the prominent mountain peaks may be discerned in clear weather, though located seventy miles and more from the city.

Denver is divided by Cherry Creek and the South Platte River into three natural divisions. North Denver is located west and north of the South Platte River, between that river and Cherry Creek is West Denver, and East Denver, the larger part of the city, is situated east of these streams. City Park, in the eastern part of the city, has an area of 320 acres. It is adorned with flowers and shrubbery, has fine statuary and zoölogical gardens, and is beautified by many lakes and driveways. The entire park system consists of twelve public parks, including Congress, Cheesman, Washington, Jefferson, and Highland parks. In the field of education it occupies a high position, having a fine school system and many charitable and higher institutions of learning. These include Denver University (Methodist), Iliff School of Theology, College of the Sacred Heart (Roman Catholic), Westminster College, and a number of medical, theological, and manual training schools. The hospitals and sanitariums are adequate to the demand and are well-managed institutions. A public library of about 250,000 volumes is maintained by the city, and in addition may be mentioned the State library and a number of others supported by societies and institutions of learning.

Denver owes its commercial importance largely to its favorable location in the proximity of productive iron, lead, silver, gold, coal, and copper mines. These natural products make the city important as a smelting center. About one-fourth of the manufactured products come from the smelting and refining works. Those of next importance are the machine shops, flouring mills, cement works, railroad car shops and foundries. The city is noted as a live-stock market and has a large jobbing and wholesaling trade, especially in dry goods and groceries. The architecture is substantial and includes many large buildings, such as the Tabor Opera House, the Equitable Building, the Denver Club, the Brown Palace Hotel, and the Chamber of Commerce.

The first settlement in the vicinity of Denver was made in 1858. It was named in honor of Gen. J. W. Denver, at that time Governor of Kansas, of which Colorado was a part. The two villages, Auraria, west of Cherry Creek, and Saint Charles, east of Cherry Creek, were united in 1859 and incorporated, but the incorporation of Denver properly dates from 1861, when it received its charter from the Territory of Colorado. In 1867 it became the capital of the Territory. South Denver was annexed in 1894. Denver was the county seat of Arapahoe County until 1902, when its government was reorganized and it became the city and county of Denver. It has had a remarkable growth since 1870, when it had a population of 4,759. Population, 1900, 133,859; in 1920, 256,491.

DENVER, University of, an educational institution at Denver, Colo. It was founded in 1864 as the Colorado Seminary, but was reorganized in 1880, when the present name was adopted. The university comprises a preparatory school and seven colleges, the latter including a college of liberal arts, the Iliff School of Theology, a graduate school, the Denver and Gross College of Medicine, the Colorado College of Dental Surgery, a college of music, and the Denver College of Law. Three of its twelve buildings are in the heart of Denver and the others are in University Park, a suburb of the city. The university has a library of 45,500 volumes, a faculty of 125 professors and instructors, and an enrollment of 3,600.

DE PAUW UNIVERSITY, an educational institution located at Greencastle, Ind. It was organized by the Methodist Episcopal Church in 1834 under the name of Indiana Asbury University, but changed to the present name on account of an endowment of $1,500,000 given by W. C. De Pauw. The value of the property is $1,700,000; the endowment is $4,600,000. It has an advanced curriculum, in which elective studies and courses are permitted. The faculty consists of 100 instructors, and the attendance is about 1,940 students. It has a library of 65,000 volumes. The alumni number more than 10,000.

DEPEW (dē̃-pū′), **Chauncey Mitchell,** orator and railroad official, born in Peekskill, N. Y., April 23, 1834; died April 5, 1928. He graduated from Yale in 1856, studied law, and began to practice in Peekskill. He served in the State Legislature in 1861-62, and in 1863 was elected Secretary of State. Subsequently he held other offices, but resigned to resume the practice of law, and in 1875 became general counsel for the entire Vanderbilt system of railways. He was chosen second vice president of the New York Central and Hudson River Railroad in 1882, three years later became its president, and in 1898 succeeded Cornelius Vanderbilt as president of the entire Vanderbilt system of railroads. He attained a wide reputation as an orator and as an active worker in the interest of the Republican party. In 1899 he was elected a member of the United States Senate and was reëlected in 1905. He is the author of "A Hundred Years of American Commerce."

DE PEYSTER (dę-pīs′tẽr), **John Watts,** author, born in New York City, March 9, 1821; died May 4, 1907. He studied at Columbia University but did not graduate. In 1845 he became a colonel in the State militia, was brevetted major general in 1866, and assisted in organizing the police department of New York City. He wrote a vast number of articles and pamphlets on historical and military subjects, relating to battles both ancient and modern. His books include "Personal and Military History of Philip Kearny," "The Dutch at the North Pole," and "Life of Field Marshal Torstenson."

DE QUINCEY (dē̃ kwĭn′sĭ), **Thomas,** noted writer, born in Manchester, England, Aug. 15, 1785; died Dec. 8, 1859. He was the son of a linen merchant, who died while quite young and left an estate to his widow, the income of which was valued at $8,000 per year. Thomas received his education at Bath and Oxford, and was noted for his ability to speak readily the Greek at fifteen. While at the university he acquired the opium habit, which clung to him long after. On leaving college he resided at the Lakes, where he met Coleridge, Southey, and Wordsworth. He returned to London in 1821 and became associated with Lamb, Knight, Hazlitt, and other men of note and learning. A persistent student of German literature, he translated from Richter and Lessing, and induced interest in the works of Kant, Schelling, and Fichte. His writings are pervaded by humor and distinguished by originality. Perhaps no magazine writer of the last century holds a higher place in English literature than he, and no one could write with greater imaginative grandeur. Faultless in style and interesting in detail, his essays have held their place well among readers. His writings include articles in the *London Magazine* and other periodicals. Among his books are "Confessions of An Opium-Eater," "The English Mail Coach," "Letters to a Young Man," "Logic of Political Economy," and a production entitled "Joan of Arc."

DERBY (dẽr'bĭ), a city in New Haven County, Connecticut, ten miles west of New Haven, at the junction of the Housatonic and Naugatuck rivers. It is on the New York, New Haven and Hartford Railroad and several electric lines. The noteworthy features include the public library, the town hall, the Housatonic Dam, and several schools. It has manufactures of cotton goods, furniture, machinery, and earthenware. The first settlement was made in 1646, when it was known as Paugassett, and it was incorporated as Derby in 1675. Population, 1900, 7,930; in 1920, 11,238.

DERBY, a city of Derbyshire, England, about 120 miles northwest of London, on the Derwent River. Among the chief buildings are the county hall, a school of art, an infirmary, and numerous churches. The chapel of Saint Mary's is a very old building, and the noted Tower of All Saints is an excellent specimen of architecture with a tower 175 feet high. Numerous railway lines furnish extensive inland connections. It has electric lights and street railways, public parks, and several fine monuments. The manufactures include porcelain, silk and cotton goods, paper, machinery, chemicals, ironware, marble, and spirituous liquors. It is surrounded by an agricultural country, in which fluorspar abounds. A station was built on the site of Derby by the Romans, to whom it was known as *Derventio.* It became a royal borough in the time of Edward the Confessor. The city was the home of Herbert Spencer. Population, 1921, 123,433.

DERBY, Frederick Arthur Stanley, Sixteenth Earl of, statesman, born Jan. 15, 1841. He was educated at Eton University and entered the army in 1858. He was elected to Parliament from Preston in 1865, became Lord of the Admiralty in 1868, and was Financial Secretary for War in 1874-77, when he was made Secretary for the Treasury. Subsequently he was made Secretary of War, later Secretary for the Colonies, and in 1888 became Governor General of Canada, serving until 1893. He rendered efficient service in the various positions, was made a Knight of the Garter, and received many honors from his government and distinguished societies.

DE RESZKE (dẹh rĕsh'kẹ), **Edouard,** opera singer, born in Warsaw, Russia, Dec. 23, 1856. He studied with his brother Jean de Reszke, and made his first appearance in public at the Italiens Theatre in Paris in 1876. Soon after he joined a company and made a number of tours of the world. He sang about four years with the Royal Italian Opera Company in London, and was with the Metropolitan Opera Company of New York City about ten years. He is regarded one of the greatest dramatic bassos. He died May 30, 1917.

DE RESZKE, Jean, tenor singer, born in Warsaw, Russia, Jan. 14, 1852. He began singing in the cathedral at the age of twelve years, entered upon the study of law, but took up the study of music. In 1874 he made his first appearance in Venice, Italy, where he sang as a baritone, but did not meet with success. He retired from the stage soon after and studied two years, and in 1879 began to sing at Madrid, Spain, in the rôle of a tenor. His success was assured and he attained much popularity as an artistic singer and actor. For many years he was with the Metropolitan Opera House Company of New York City. He died April 3, 1925.

DERRICK (dẽr'rĭk), an apparatus for lifting and transporting heavy weights, such as stone in a quarry. It consists of a tall mast fastened on a pin, on which it may revolve, and is anchored by ropes extending from the top to the ground. A boom is hinged near the bottom of the mast, so constructed that the upper end may be raised or lowered by suitable rope tackle, which works through blocks fastened respectively near the outer end of the boom and near the top of the mast. At the foot of the mast is a system of wheels, with which the tackle block is attached by a rope, and the weight is moved by turning the mast, which causes the boom to swing around. The traveling crane has displaced the derrick in most manufacturing establishments.

DERVISH (dẽr'vĭsh), a Mohammedan devotee, who takes a vow of poverty and austerity of life. Numerous different orders are maintained. Some dwell in monasteries, others live as hermits, and some lead a life as wandering mendicants. The dancing dervishes are a class that accustom themselves to spin or whirl around for hours at a time, uttering *Allah,* and making violent motions of the body. After they reach a state of exhaustion, they claim to be inspired and to possess the power of curing diseases and interpreting dreams.

DESAULT (dẹ-zō'), **Pierre Joseph,** surgeon, born at Magny-Vernais, France, in 1744; died June 1, 1795. He studied for the church, but turned his attention to medicine and surgery. In 1782 he was made surgeon major to La Charité and finally became chief surgeon to the Hotel Dieu in Paris. In connection with the latter he instituted a clinical school which attracted a large number of students. He wrote many works on surgery and introduced numerous improvements into his profession, especially in the treatment of fractures and ligature of arteries.

DESCARTES (då-kärt'), **René**, philosopher and mathematician, born near Tours, France, March 31, 1596; died in Stockholm, Sweden, Feb. 11, 1650. He was educated at the Jesuit College of La Flèche, where he was distinguished as an apt student and careful learner. After leaving school, he deprecated most of what he had learned, and began to pursue a course of original investigation, through which he made many new discoveries and attained much useful knowledge. Entering the military service, he participated in the campaigns in Holland and Bavaria, but left the army in 1621 and settled in Holland, where he devoted himself to study. His original investigations were the means of contributing much to the advancement of physics and mathematics. In the latter he made a number of contributions to geometry. His work on philosophy, entitled "Discourse on the Method of Reasoning," attracted much attention. Queen Christiana invited him to Sweden in 1648 to further learning, and the queen herself became his pupil. Owing to the cold winters of the north and the exertion in waiting upon the queen as early as five o'clock, he failed rapidly and died in the Swedish capital. His chief writings, besides the one named, are "Geometry" and "Principles of Philosophy."

DESCENT (dê-sĕnt'), in law, a passing from an ancestor to an heir, a transmission by inheritance or succession. The laws of most countries are founded upon the principle of equal distribution, both of personal and real property, among the heirs in the nearest surviving degree. The three classes of kindreds are direct descendants, ancestors, and collateral relatives; the latter include those who have descended from the same common ancestors. There are two sets of collateral relatives, as well as two sets of ancestors, the *paternal* and the *maternal*. *Lineal descent* is where property descends directly from father to son and from son to grandson; *collateral descent* is where it proceeds to a brother or sister, nephew or niece, or to other collateral representatives. If an individual dies *intestate*, that is, without relatives or without leaving a will, his property usually escheats to the state.

DESERT (dĕz'ĕrt), a region in which plant and animal life is very scant or entirely absent. Some writers class the regions that are barren from cold or lack of soil as deserts, such as Greenland and the lands of the Arctic and Antarctic zones. However, the name is usually applied to the localities of continents that have a climate quite favorable, but whose barrenness is due to the lack of soil or the supply of moisture. Arid deserts are most extensive in Asia, Africa, and Australia, are almost entirely unknown in Europe, and occupy only a small part of the continents of North and South America. The Sahara Desert, which crosses the north central part of Africa, from the Red Sea to the Atlantic, is the largest arid belt of the world. It extends under different names into Asia, where it is known as the Arabian Desert, the Desert of Gobi, and the Salt Desert. The Kalahari Desert, in South Africa, is bounded by the Orange, Zambezi, and Limpopo rivers. A large part of the interior of Australia is a desert. The Colorado Desert, in California, and the Atacama Desert, in northern Chile, are among the barren regions of North and South America.

Deserts vary considerably in the character of their surface. Some consist chiefly of sand and gravel, which frequently drift to form dunes, and others have a rocky surface. Oases are located in many desert regions owing to the presence of springs, or to the streams that rise from the precipitation of high mountains, irrigating the valleys below. Deserts are due to various causes, such as the direction of prevailing winds, which deprive them of moisture; long distance from the oceans; and isolation through surrounding mountain systems. The soil in many parts of the desert is quite fertile, needing only a supply of moisture to render it productive. See **Arid Region.**

DES MOINES (dẹ-moin'), the largest river in the State of Iowa. It rises in the southern part of Minnesota, flows in a southeasterly direction, and discharges into the Mississippi about four miles below Keokuk, after a course of 500 miles. Among its principal tributaries are the Raccoon and Boone rivers. It drains a fertile agricultural country. Belts of hard wood timber are on either side in Iowa, and it passes through regions rich in coal and limestone deposits. Among the cities on its banks are Fort Dodge, Des Moines, and Ottumwa. It forms the boundary between Lee County, Iowa, and Missouri.

DES MOINES, the capital and largest city of Iowa, county seat of Polk County, near the geographical center of the State. It is finely situated at the junction of the Des Moines and Raccoon rivers, both of which are crossed by a number of substantial bridges. It is on the Chicago, Rock Island and Pacific, the Chicago Great Western, the Chicago and Northwestern, the Chicago, Milwaukee and Saint Paul, the Wabash, the Chicago, Burlington and Quincy, and other railroads, and has extensive urban and interurban electric railway facilities.

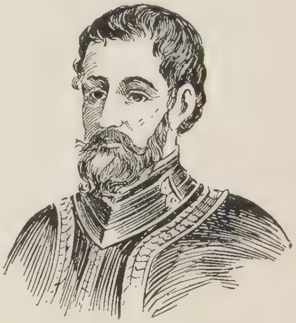
The capitol building, one of the finest in the United States, was erected at a cost of $3,000,000. Other public buildings include the United States Federal Court and Post Office, the State library, the State historical building, and the city buildings. The new county courthouse, a fine structure of stone, was completed in 1907, and the Coliseum, on Locust Street, has a seating capacity of 9,000. Des Moines is the seat of Drake University, Des Moines University, Danish Lutheran College, several business colleges, and a number of parochial schools. The Iowa State Fair Grounds are located in the eastern part of the city and several fine parks are maintained, including Grandview and Greenwood parks. The State library has about 70,000 volumes, the public library has 90,000 volumes, and several other libraries are maintained by the educational institutions.

Many of the streets are paved substantially with asphalt, brick, and macadam. Water power is obtained by means of a dam across the Des Moines River and the city supply of water is procured from the Raccoon River. Near the State capitol building is a fine soldiers' monument. The chief hotels include the Savery, Fort Des Moines, Chamberlain, and Victoria. Among the leading business buildings are the Fleming, Hippee, Equitable, and numerous office and wholesale buildings. The surrounding country is agricultural and stock raising, while the river bluffs are rich in coal deposits, giving the city a large volume of raw material for transportation and use in manufacturing enterprises. Among the chief manufacturing establishments are medical and chemical works, flouring mills, furnaces, clothing and cigar factories, typewriter works, canning and packing establishments, and machine shops. It has a large retail and wholesale trade in manufactures and merchandise, and supplies these commodities to retail dealers in many towns and cities of Iowa. Des Moines occupies the site of Fort Des Moines, which constituted a United States garrison in 1832. It was incorporated in 1851 and chartered as a city in 1857. Fort Des Moines, a United States garrison, is located south of the city. Population, 1905, 75,626; in 1925, 141,441.

DESMOULINS (dȧ-mōō-lăn′), **Benoît Camille,** public man and journalist, born at Guise, France, March 2, 1760; died April 5, 1794. He studied law in Paris, practiced as an advocate, and joined the party of revolutionists. In 1789 he delivered a passionate address which aided in stirring up the people to storm the Bastile on the following day. While at the university as a student, he formed the acquaintance of Robespierre, with whom he acted against the Girondists, but in most of his career he was a devoted follower of Danton. Later he became involved in the proscription of Danton, with who he acted against the Jacobins, but both were arrested and guillotined.

DE SOTO (dė sō′tȯ), a city in Jefferson County, Missouri, forty-four miles southwest of Saint Louis, on a line of the Missouri Pacific Railroad. It is situated in a zinc and lead producing region, and is a shipping center of cereals and mineral products. The industries include grain elevators, flouring mills, and machine shops. It has electric lighting, a public high school, and other improvements. Population, 1900, 5,611; in 1920, 5,003.

DE SOTO, Fernando, captain and explorer, born in Estremadura, Spain, about 1496; died May 21, 1542. He descended from an impoverished family of rank, but was favored by a friend named Pedrarias de Avilo with means to pursue his studies at the university. His first voyage was made to Darien in 1519 under the command of a captain, and a second was made to Nicaragua in 1527. In the following year he explored the coast of Guatemala and Yucatan, and in 1532 led 300 volunteers to reinforce Pizarro and assist in conquering Peru. He was given permission to conquer Florida by Charles V., who in the meantime appointed him governor of Cuba. He undertook the conquest of Florida in 1538 with the idea that he would find wealth fully as great as enriched him in Peru.



FERDINAND DE SOTO.

De Soto, with a company of 600 men, anchored in the Bay of Espiritu Santo (now Tampa Bay) on May 25, 1539. Landing safely on the shore, the ships were sent to Cuba, and the explorers entered upon a continuous expedition for nearly four years in search of fortune and fame, ever allured by the reports of the wealth that lay beyond. The march was characterized by difficulties in crossing streams and marshes, and by the harassing onslaughts of the Indians. De Soto's route lay through northern Florida into Georgia, then south toward Mobile, and finally toward the Mississippi. The expedition reached the Washita River, and in the spring the company, greatly lessened in numbers, returned to the Mississippi. De Soto was disappointed by failure and died. To conceal his death from the Indians his body was wrapped in a cloak and lowered into the waters of the Mississippi. Only about one-half of his companions survived. The survivors sailed down the river in boats and safely reached the Mexican city of Panuco.

DES PLAINES RIVER (dẹ plān′), a river of the United States, rises near Racine, Wis., and after a course of 150 miles joins the Kankakee River to form the Illinois River. The general course is south to Lyons, near Chicago, whence it flows toward the southwest. A low ridge separates its basin from Lake Michigan, and thirteen miles of its lower course is utilized in the Chicago Drainage Canal.

DESSAU (dĕs'sou), a city of Germany, capital of the duchy of Anhalt, eighty miles southwest of Berlin. It is situated in a beautiful valley of the Mulde River, near its junction with the Elbe, and is surrounded by a fertile country. The streets are broad and well improved with substantial paving. Electric and steam railroads furnish ample interurban and general transportation facilities, making it an important commercial center. Among the manufactures are cotton and woolen goods, sugar, carpets, pottery, tobacco products, and machinery. It has a gymnasium, three large libraries, many fine churches, and a number of charitable and educational institutions. In its public places are monuments of Wilhelm Müller, the poet, and Moses Mendelssohn, the philosopher, both of whom were born here. Dessau was the scene of a battle in the Thirty Years' War, in 1626, when Wallenstein defeated Count Mansfield at the bridge over the Elbe. Population, 1905, 55,134; in 1920, 56,606.

DE TOCQUEVILLE (da̤ tŏk'vĕl), **Alexis,** statesman, born in Paris, France, July 29, 1805; died April 15, 1859. After receiving an education, he was admitted to the legal profession and practiced with success. He visited the United States in 1831 to study the prison system and modes of punishment. On returning to France, he was elected a member of the chamber of deputies, and later served as minister of foreign affairs. Among his writings are "On Democracy in America" and "Old Régime and the Revolution."

DETROIT (dē-troit'), the chief city and port of entry in Michigan, county seat of Wayne County, on the Detroit River, opposite the Canadian city of Windsor. It is about 18 miles from Lake Erie, 10 miles from Lake Saint Clair, and 285 miles east of Chicago. The site is on a fine eminence, the streets are well paved and shaded by avenues of trees, and the various portions are connected by a system of electric railway lines. It is the focus of many railways, and has dock facilities for large vessels, giving it extensive conveniences for transportation to the chief cities of America. The railroads include the Wabash, the Grand Trunk, the New York Central, the Canadian Pacific, the Michigan Central, and the Pére Marquette.

The city has a river frontage of 16 miles and extends about ten miles inland from the river. The area is 135 square miles, and the site rises gradually from the river toward the north. Most of the streets are platted to cross each other at right angles, but are intersected by broad avenues which radiate from a semicircular plot within the city known as Grand Circus. This park is crossed by Woodward Avenue, which divides the city into nearly equal parts, and is the principal business street. It becomes a residence street farther from the center of the city and is connected with Campus Maritus, a fine plot of ground a short distance from the river. Griswold Street is the banking center, Lafayette and Michigan avenues have notable buildings, and Jefferson Avenue, Cass Avenue, and Arden Park have many fine homes.

Parks and Buildings. The parks embrace about 3,184 acres and are well distributed in the different parts of the city. Belle Isle Park is located on Belle Isle, an island in the Detroit River, and is one of the finest. It is connected with the city by a substantial bridge, has a number of interior lakes and canals, and contains about 700 acres. Palmer Park is located on Woodward Avenue, six miles north of the city hall. Clark and Voigt parks are beautiful grounds. Among the principal buildings are the city hall, the General Motors Building, the Majestic Building, near the city hall, the post office, the county courthouse, the Y. M. C. A. Building, and the Book-Cadillac Hotel. The churches include Saint John's Protestant Episcopal, First Presbyterian, Trinity Protestant Episcopal, Sacred Heart of Mary, Fort Street Presbyterian, Woodward Avenue Baptist, and the Jewish Temple. A fine library is maintained in the Museum of Art, which occupies a commodious building.

Educational. Detroit is noted for its finely graded system of public schools, which are supplemented by a number of higher institutions of learning. The University of Detroit, a normal school, Detroit Homeopathic College, Detroit College of Law, and Michigan College of Medicine and Surgery are among the higher and professional institutions. The city library has about 900,000 volumes, and books are distributed in several branches for the convenience of reading and reference. Many charitable and benevolent institutions are maintained. It is the seat of the Saint Vincent's Orphan Asylum, Florence Crittenden Home, Protestant Orphan Asylum, Deaconess' Home, and many others.

Commerce. Detroit is favored in the expanse of its commerce and industry by its favorable location on navigable waters and numerous railroads. Among the northern ports it takes second rank in foreign trade, much of which is with Canada. The exports include cereals, live stock, hides, automobiles, and machinery. It is favored as a center of wholesaling and ships large quantities of manufactures and merchandise to points in Michigan and adjoining states. Among the leading manufactures are automobiles, furniture, paints and varnishes, matches, chemicals and drugs, steel and iron products, and machinery. It is a slaughtering and packing center and has large establishments for the manufacture of paint and varnish. Large shipments of ore are received from points in northern Michigan and Minnesota, and coal is obtained from Ohio and Pennsylvania, hence its iron and steel industries have been making marked advancement.

History. The first settlement on the site of Detroit was made by the French in 1701, when

Cadillac, governor of the French territory, built Fort Pontchartrain. It remained a French trading village until 1760, when it was captured by the British. At the close of the French and Indian War, in 1763, it became British territory, and finally passed to the United States in 1796. It was incorporated as a town in 1802, but its charter as a city dates from 1824. In 1805-37 it was the capital of the Territory of Michigan, and remained the capital of the State until 1848, when it was superseded by Lansing. Population, 1904, 317,591; in 1920, 993,678.

DETROIT RIVER, the channel or strait which connects Lake Saint Clair and Lake Erie, by which the waters of the three upper Great Lakes reach the Saint Lawrence. It is about twenty-five miles long, three-fourths of a mile wide, and navigable by the largest vessels. For four months in the year it is ice-bound. Within the river are many islands and much fine scenery. The commerce is very extensive. It was named from the French, the name meaning strait.

DEUCALION (dů-kā'lĭ-ŭn), in Greek mythology, the son of Prometheus, husband of Pyrrha, father of Helen, and ancestor of the Hellenes. By building a ship he was enabled to save himself and his wife from destruction by a flood that Zeus sent upon the earth. After floating for nine days, the ship rested on Mount Parnassus, and the occupants landed safely. An oracle directed them to throw stones behind their backs in order that the loss of mankind might be repaired. On doing so the stones thrown by Deucalion turned to men, and those thrown by Pyrrha to women.

DEUCHER (doik'ẽr), **Adolph,** statesman, born in Steckborn, Switzerland, in 1831; died in 1912. He was educated in his native town and turned his attention to medicine, for which profession he studied at Heidelberg, Zurich, and Vienna. However, he gave more attention to politics than to his profession, and in 1855 became a member of the council of his canton. He was a member of the national council of Switzerland in 1869-73, and was elected president of Switzerland in 1886, to which office he was again elected in 1897. As a statesman he was progressive and favored a policy friendly to education and the encouragement of foreign trade.

DEUTERONOMY (dū-tẽr-ŏn'ō̇-mỹ), the fifth book of the Pentateuch and of the Bible. It is thought that Moses himself wrote this part of the Holy Scriptures, with the exception of the last four chapters, in which the closing events in the life of the great lawgiver are narrated. It repeats the laws which had previously been promulgated, hence the name. In it is the history of what passed in the wilderness during about five weeks, from the beginning of the eleventh month to the early part of the twelfth month, in the fortieth year after the Israelites departed from Egypt. Moses recounts in Deuteronomy the events which had taken place in the Israelitic history, and makes comprehensive references to particular phases in the law received at Sinai. The books which precede Deuteronomy are *Genesis, Exodus, Leviticus,* and *Numbers.*

DEUTSCH (doich), **Emanuel Oscar Manahem,** Oriental scholar, born at Neisse, Germany, Oct, 28, 1829; died May 12, 1873. He was of Jewish parentage, studied at the Berlin University, and gave special attention to theology and German literature. The expense of university attendance was borne by himself with funds derived from teaching and writing for magazines. He was offered an appointment in the library of the British Museum in 1855, which he accepted and held for nearly twenty years. Besides attending to the duties of the position, he made use of the treasures in the museum and wrote largely for magazines and other publications. Among his writings are "Articles on the Talmud," 190 pages to the Chambers' "Encyclopaedia," and numerous productions on ancient history. In 1869 he traveled through Northern Asia, and on his return to Europe delivered numerous lectures on Phoenicia. He made a second visit to the East in 1872 and died at Alexandria, Egypt, the following year.

DEVENS (dĕv'e̮ns), **Charles,** jurist and soldier, born in Charlestown, Mass., April 4, 1820; died Jan. 7, 1891. He graduated at Harvard and studied law at Cambridge, and was elected to the State Senate in 1848. The following year he became United States marshal for the district of Massachusetts. In the capacity of marshal he delivered Thomas Sims, a fugitive slave, to the owner against his own inclination. He rendered efficient service in the Civil War, at Fair Oaks and Richmond, and was brevetted major general for gallantry after the capture of the latter. In 1866 he resumed the practice of law, and in 1873 was appointed justice of the supreme court of Massachusetts. President Hayes made him Attorney-General of the United States, and at the close of the administration he resumed his former position as justice of the Massachusetts supreme court.

DEVIL (dev''l), in theology, the sovereign spirit of evil, corresponding to the *Satan* of the Hebrews and the *Iblis* of the Mohammedans. In the Bible the devil is represented as the evil one and the father of lies. He is regarded a rebel against God, a being who is perfect in every kind of skill and knowledge, which he uses to pervert man and entangle him in the meshes of sin. In the Middle Ages, even as late as the 17th century, the belief in evil spirits was very common. In many instances, when a man of genius had made a scientific discovery or accomplished some extraordinary feat, it was supposed that his mind was assisted by the devil in some mysterious way.

As sovereign of the demons, the devil held a prominent place in the practice of magic and in many of the poetical legends. In the mysteries (q. v.) he was often represented on the stage with flaming eyes, hooked nails, cloven hoofs, spreading horns, black complexion, and sulphuric odor. Milton and Klopstock, the former in the character of *Satan,* and the latter in that of *Abbadonna,* introduced the devil as a fallen angel, still somewhat dignified amid the disfigurements of sin. The doctrine of the fathers of the church, founded upon certain passages of the Scriptures, makes him the leader of a rebellion among the angels, the enemy of God, the author and constant promoter of sin, now suffering chastisement for his crimes, and destined to eternal punishment. He is called the prince of this world and regarded the cause of man's fall from grace, yet his power was broken by the work of Christ, hence Christians can rise superior to the might of his influence.

DEVIL FISH, the name of a fish belonging to the ray family, common to the waters of the Atlantic and Pacific coasts. It has a winglike process on each side and the head is truncated in front, giving it a peculiar appearance when moving in the water. Divers dread it as a dangerous inhabitant of the sea.

DEVILS LAKE, a city of North Dakota, in Ramsey County, on the north shore of Devils Lake. This lake is forty miles long, about ten miles wide, and its surface is 1,465 feet above the sea. The water is saline and shallow in many places and the lake has no visible outlet. The city is the county seat of Ramsey County, located on the Soo and the Great Northern railways, and is in a fertile farming country. It has a growing trade in produce and merchandise. Among the chief buildings are a county courthouse, a high school, and several fine churches. Population, 1900, 1,729; in 1925, 5,409.

DEVONIAN (dē-vō'nĭ-ạn), one of the rock systems of the Palaeozoic period, located between the Silurian and Carboniferous systems. It is so named from Devon, England, where its strata were first distinguished from those of the Silurian and Carboniferous by Sir R. Murchison. Geologists usually divide it into three groups, the *Lower,* the *Middle,* and the *Upper,* of which the last mentioned is notably distinguished by the presence of large deposits of old red sandstone. The fossil remains are very abundant, especially those of fishes, and include crustaceans, corals, mollusks, crinoids, and cephalopods. The rocks of this system are especially abundant in the Catskill Mountains of New York, where they approximate a thickness of 2,000 feet. They are distributed in many parts of North America, being found in the Black Hills of South Dakota, in Utah and Nevada, in many sections of the Appalachian Mountains, and in Ontario and other localities of Canada. See **Geology.**

DEVONSHIRE (dĕv'ŭn-shĕr), **Spencer Compton Cavendish, Eighth Duke of,** statesman, born in London, England, July 23, 1833; died Mar. 24, 1908. He studied at Cambridge, where he graduated in 1854, and three years later entered Parliament as a Liberal. He rose to the dignity of Liberal leader. In 1891 he became eighth Duke of Devonshire.

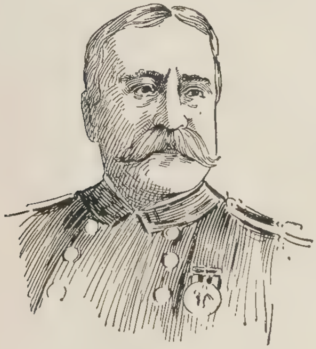
DEVONSHIRE, Victor Clinton William Cavendish, public man, born in England in 1868. He studied at Cambridge and became a member of Parliament as a liberal-unionist. In 1900 he was made treasurer to the royal household, serving until 1903, and subsequently held various important offices. In 1916 he became governor-general of Canada, succeeding the Duke of Connaught, in which position he proved himself highly efficient.

DEW (dū), a condensation of moisture from the atmosphere in the form of minute globules upon the surface of certain bodies. On a glass filled with cold water, set out on a warm day, small drops of water form, which are derived entirely from the air. This is caused by the temperature of the air, coming in contact with the cold side, being lowered below the dew point; thus, it deposits the surplus moisture beyond its power of retention. The dew seen on plants and other objects has a similar origin. The earth absorbs more heat during the day than it emits, and at night, when the supply of warmth is cut off, it continues to radiate heat. Objects above the surface of the earth cool more rapidly than the air or the earth, thus resulting in a formation of dew as the air or radiated warmth comes in contact with plants and other objects above the surface. Dew is deposited as hoarfrost when the objects are colder than 32° Fahr.

Dew accumulates much more readily on some objects than on others, because some substances radiate their heat more rapidly than other bodies. The deposit is greater during a clear night than when it is cloudy, for the reason that the earth and air cool more readily when it is clear. The reason that more dew is deposited on a still night than when it is windy is due to the fact that air must remain for some time in contact with cold objects to enable them to lower its temperature and collect its moisture. The amount of dew deposited in warm countries greatly exceeds that of cold regions, and in some regions it is one of the principal sources of moisture for the growth and development of plants. Air is said to have reached its dew point when it contains all the moisture it is capable of holding. The dew deposited is from a comparatively thin stratum of air in the immediate proximity of the cool object. The general precipitations, including rain, snow, and hail, are caused by the cooling of large masses of air.

DE WET (dẹ-vĕt'), **Christian,** military officer, born in South Africa in 1853. His early life was spent on a farm and his education was in private schools. He took part in the War of 1880-81 between the Transvaal and the British, in which he rendered gallant service as a commissary officer. At the outbreak of the final war between the two countries, in 1899, he received an important command in the Boer army, and rendered efficient service in several important engagements. In 1902 he evaded capture by the British in an engagement between Lindley and Kroonstad, and fought efficiently until his final surrender to Lord Kitchener. As a commanding officer he had the confidence of his soldiers, but many excellent plans in conducting the war might have been carried out more efficiently had he received the hearty support of the burghers that made up his army. After the war he raised funds in Europe and America for needy Boers. In 1914 he supported the revolt against the British. He died Feb. 5, 1922.

DEWEY (dū′ĭ), **George,** admiral of the United States navy, born in Montpelier, Vt., Dec. 26, 1837. He entered the Norwich Military Academy at the age of fifteen and two years later the Naval Academy at Annapolis, where he graduated in 1858 in a class of sixty-five, taking rank as fifth in the class. In the Civil War he served in the West Gulf squadron, which came under the command of Admiral Farragut in February, 1862. He attained distinction on account of bravery and efficiency under numerous circumstances, and rendered valuable service in the Battle of New Orleans and two attacks on Fort Fisher. In the early part of 1865 he was made lieutenant commander, and served with the European squadron the first two years after the war. In 1875 he became commander, was advanced to the rank of captain in 1884, having in command the *Dolphin* of the White Squadron, and the next year was transferred to the *Pensacola,* the flagship of the European squadron. He served as commander in several responsible positions in 1888 and, after being made commodore, became the chief of the board of inspection and survey.


GEORGE DEWEY.

In the early part of 1898 he was ordered to sea and given command of the Asiatic squadron, which took an important part in the war with Spain. On May 1, 1898, he entered Manila Bay and destroyed the Spanish fleet without the loss of a man or ship, on account of which he has been named the "Hero of Manila." As soon as the Battle of Manila was reported, President McKinley made him an acting rear admiral. Congress voted resolutions of thanks and passed a bill under which he might receive promotion to the rank of rear admiral. On March 4, 1899, he was made admiral, being the third to hold this highest position in the navy of the United States. A demonstration was given in his honor on Sept. 29, 1899, at New York City, when he returned to the United States. For this occasion many distinguished men were present, the celebrated Dewey Arch was constructed, and the character of the celebration far surpassed any reception ever given in America. Similar receptions were afterward given in Washington and in his native city. In the same year the American people presented him with an excellent residence, as a token of appreciation of his valuable service. He died Jan. 16, 1917.

DEWEY, John, educator, born at Burlington, Vt., Oct. 20, 1859. He was educated at the University of Vermont and at Johns Hopkins University, and held professorships in the universities of Minnesota and Michigan. Later he was professor of philosophy in the University of Chicago, and in 1904 became head of the department of philosophy at Columbia University Subsequently he accepted a similar position at Rome, Italy, in the American College. He contributed extensively to educational and scientific journals, covered a wide field in lecturing, and is the author of several standard publications. His books include "The Critical Theory of Ethics," "Psychology of Number," "Studies in Logical Theory," "The School and Society," "Leibnitz's Essays Concerning the Human Understanding," and "Democracy and Education."

DEWEY, Melvil, author and librarian, born at Adams Center, N. Y., Dec. 10, 1851. He graduated at Amherst College, where he was librarian for two years, and subsequently went to Boston to aid in the organization of the American Library Association, of which he was president a number of years. In 1883 he became chief librarian of Columbia College, and four years later was chosen secretary and treasurer of the University of the State of New York. He promoted the organization of a system of traveling libraries of New York and other states. In 1904 he became State director of libraries in the State of New York. He published "Library School Rules" and "Decimal Classification and Relative Index."

DE WITT (dẹ vĭt′), **Jan,** famous statesman, born in Dort, Holland, in 1625; died Aug. 20, 1672. He was the son of Jacob De Witt and from him inherited a hatred of the family of William, Prince of Orange, afterward William III. of England. He was given chief command in the war begun against England in 1655, holding that position until its termination. His influence was lost when Louis XIV. of France invaded the Spanish Netherlands in 1672, involving Holland in war. Soon after William of Orange became governor and received an appointment as commander of the Dutch forces. Cornelius De Witt, brother of Jan, had been tried and imprisoned for conspiracy against the life of the stadtholder or governor, when he was visited by Jan De Witt. Tumults arose among the people on this occasion and both were murdered.

DEXTRIN (dĕks'trĭn), a brownish-white compound found in nature, as in the sap of plants, and formed by the action of heat or acids on starch. It is soluble in water and may be purified by precipitating it with alcohol. Dextrin is used in medicine as a substitute for gum arabic, in calico printing, and in stiffening textiles. It is employed to a large extent on the back of postage stamps.

DHAWALAGIRI (dä'wä-lä-gē'rḗ), or **Dhaulagiri,** an elevated peak of the Himalaya Mountains, in Nepal. Its height is 26,825 feet, the fourth in height of that great system, being exceeded by mounts Everest, Kinchinjunga, and Shumalari.

DIABASE (dī'ȧ-bās), a crystalline rock of the igneous group, composed of feldspar, pyroxene, and lime soda. The texture is crystalline throughout and the composition is hard and compact. Feldspar found in diabase is usually formed in bladed crystals, which give the rock a mottled appearance, especially if the grains of pyroxene are coarse. Some specimens have a green color, owing to the presence of olivine. Diabase formations are widely distributed. They occur in the Keweenaw Peninsula of Lake Superior, in the Palisades of the Hudson River, in the Deccan of India, and in several sections of the Scandinavian Peninsula.

DIAGORAS (di-ăg'o-ras), ancient Greek philosopher and poet, surnamed the Atheist, lived about 425 B. C., in the time of Socrates. He turned against the gods of Greece because a wrong done to him went unpunished, and on account of blasphemous speeches was obliged to leave Athens. In making his flight he was shipwrecked and perished. None of his works is now extant.

DIAL (dī'a̤l), an instrument for ascertaining the time by means of the shadow of a stile or gnomon, through the agency of the rays of the sun or moon thrown upon a graduated plate or disk. It is certain that the dial is the invention of the Asiatics. When Ahaz went to Damascus in 771 B. C., he saw a beautiful altar and sent plans of it to Jerusalem. On his return an altar was constructed. He set a dial which is mentioned in connection with the cure of his son Hezekiah thirteen years after the death of Ahaz. This is, perhaps, the first dial on record, and is some earlier than the eclipse of the moon observed at Babylonia as recorded by Ptolemy.

Dials were in general use before watches and clocks became common as timekeepers. They are of various construction, either upright, horizontal, or inclined. The common dial has a horizontal plane, or dial plate. The stile, pointing toward the North or South Pole, north or south of the Equator respectively, is adjusted to retain its parallelism to the earth's axis. This form becomes a polar dial at the Equator. The hour lines intersect each other and the stile intersects the plane of the dial at all latitudes, except at or near the Equator. The shadows of the stile or gnomon cast upon the figures of the dial mark the several hours of the day, indicating the sun's distance from the meridian. Similar dials are made to indicate the time of the night by the shadow of the moon or stars. These instruments are not serviceable during cloudy weather.

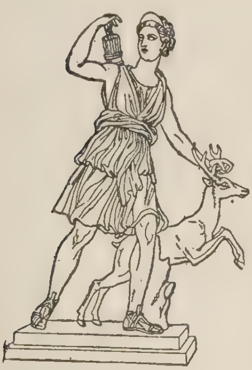
DIAMETER (dī-ăm'ḗ-tẽr), a straight line drawn through the center of a circle or sphere, terminating at two opposite points of the circumference. A circle is divided into two equal parts by its diameter, which is its greatest chord. A diameter of a cylindrical body is that of one of its circular sections. The diameter of a body is found by dividing its circumference by 3.1416.

DIAMOND (dī'ȧ-mŭnd), one of the most valuable and the hardest of precious stones, being the purest form in which carbon is found. Its crystals are cubical in form and most commonly have twelve faces. Diamonds of the finest quality are colorless, perfectly clear, and said to be of the *first water*. Some varieties are green, orange, red, yellow, or blue, these being highly prized, if the tint is decided and equal throughout. It is transparent and translucent, and is so hard that it can be cut only by itself, and will scratch any other substance. When cut and polished, a diamond of the purest water weighing one carat is valued at about $500, and the value increases as the square of the weight in carats is multiplied. Its commercial value is affected by the slightest tinge of color, though blue-colored diamonds are exceedingly rare and have commanded enormous prices.

The annual production of diamonds in South Africa is about 2,750,000 carats, equal to about five-eighths of a ton. The amount realized by the sale of this production is estimated at $18,500,000. However, the output varies greatly from year to year, being greatest in 1901, when the production of the Kimberley fields was sold for $23,144,225. Other productive diamond fields are located in Brazil, Australia, and India, though small quantities are found in various other regions, especially in the Ural Mountains, California, and several other states of the United States. The diamond fields of Brazil were discovered in 1728, and the largest single specimen found there weighed 254 carats. It was sold to the Gaikwar of Baroda for $400,000, and became known as the "Star of the South."

Diamonds are found in the sand and gravel of river, lake, and sea beds, and in diamond-bearing rocks. The stones are separated from the sand and rock by washing; this requires elaborate machinery and a large water supply. The principal uses of diamonds are for polished gems, cutting glass, ornaments, and boring or drilling. Engravers use diamonds as etching points, for which purpose they are cut in various forms, the value depending largely upon skill in cutting. Recent experiments tend to show that diamonds may be produced by bringing carbon in contact with fused silicate mineral. It is thought that the African diamonds were formed in this way, since they are found in igneous rock adjacent to carbonaceous shale.

Among the diamonds celebrated in history is the Great Mogul, found in 1550, in Golconda, which weighed 793 carats and was cut to 279 carats. The Austrian is a rose cut diamond weighing 140 carats. The great Russian diamond, now in the scepter of Russia, weighed 193 carats. It was purchased by Count Orloff for $500,000 and presented to Catharine on her birthday in 1772. The Kohinoor, meaning "Mountain of Light," belonged in turn to Shah Jehan, Aurungzebe, Nadir Shah, the Afghan rulers, and afterward to the East Indian Sikh chief, Runjeet Singh. It was surrendered to the Queen of England in 1849 by the last ruler of the Punjab, when the annexation of his dominions to Britain took place. Originally it weighed 800 carats, but was reduced by unskillful artists to 279 carats. It was recut in 1852 and now weighs 103 carats. The Regent or Pitt diamond, now in the Louvre, Paris, weighs 136 carats and is said to be worth $2,500,000. Among the largest diamonds found in South Africa is one that weighed 302 carats and another weighed 3,000 carats.


DIANA

DIANA (dī-ā′nȧ), a goddess of the Romans, known among the Greeks as Artemis. She was the daughter of Zeus and Leto, the twin sister of Apollo, and the goddess of hunting and chastity, but is sometimes represented as goddess of the moon. Being skillful with the bow, she was able to deal out death and sudden destruction to men and animals, while her amiable disposition caused her to alleviate suffering and to care for the diseased. In statuary she appears as a youthful and slender maiden, her hair gathered in a knot at the back of her well-shaped head, and a figure most graceful in proportions and attitude. The free use of her limbs is allowed for hunting by a short robe, and the bow and quiver bear evidence of her devotion to the chase. The most celebrated statue is that known as the Diana of Versailles, preserved in the Louvre, which was found near Tivoli, and forms a worthy companion to the Apollo Belvedere of the Vatican. In this statue the goddess appears in the act of rescuing a deer from its pursuers and turns to the latter with an angry mien. With one hand she draws an arrow from the quiver, while the other is laid protectingly on the head of the stag.

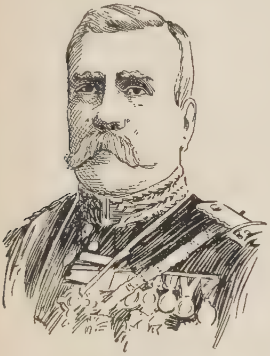
DIANA, Temple of, an architectural structure of Ephesus, in Asia Minor, one of the seven wonders of the world. It was built at public expense under plans made by Chersiphron of Cnosus, the chief architect. Pliny thought that it required 120 years to complete the building, which was 225 feet wide and 425 feet long, and had 126 columns that were 60 feet high and constructed of Parian marble. These columns were in four rows, two rows of eight columns each across the front and two rows of twenty columns each on the sides, with an additional number set near the main entrance. Herostratus is said to have burned it in 356 B. C., when a part of the temple was destroyed. The Goths plundered it in 262 B. C. Excavations made in 1869 led to a discovery of the site, and a number of sculptures and fragments of the architecture are preserved in the British Museum and other collections.

DIAPHRAGM (dī′ȧ-frăm), the broad, almost circular muscle which separates the cavity of the thorax from that of the abdomen. It is thin and in its center has some fibrous tissue. Because of the constant pressure of the abdominal viscera and muscles, it arches up in the thorax. Through it pass the oesophagus, aorta, thoracic duct, inferior vena cava, and a number of the large nerves. During inspiration it ascends, thus increasing the capacity of the thorax, whose vacuum is filled with air, and in expiration it assumes its former position. Expulsions of air are governed largely by the diaphragm, hence it is a factor in laughing, crying, sneezing, and coughing. Sudden contraction of the diaphragm cause hiccoughing.

DIARBEKIR (dē-är′bĕk-ẽr), or **Diarbekr,** a city of Asiatic Turkey, capital of the vilyet of Diarbekir, on the Tigris River. Most of the architecture is inferior, constructed chiefly of rough stone or of sun-dried brick, but it has a number of fine bazaars, mosques, and Christian churches. The manufactures consist chiefly of utensils and silk and cotton textiles. Copper is mined in the vicinity. Anciently it was known as Amida. Constantinus fortified it, but it was captured by the Persians in 502 A. D. Population, 1922, 46,500.

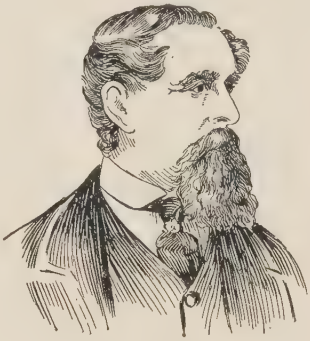
DIAS (dē′äs), **Bartolemeu,** Portuguese navigator, born about 1445, lost in a storm May 29, 1500. He was of noble birth and had his residence at the court of King John II. An early interest in geography aided in developing his knowledge and ability as an explorer and discoverer. In 1486 he was given command of an expedition that sailed from Portugal to explore the northern coast of Africa. The voyage included a visit to the southern part of Africa, and resulted in claiming that region in the name of the King of Portugal. Later he sailed farther south, discovered the Cape of Good Hope, and returned to Lisbon in December, 1487, where he was received with enthusiasm. He sailed on a voyage of exploration three years later under Cabral, discoverer of Brazil, but was shipwrecked and the entire crew was lost.

DIATOMS (dī'ȧ-tŏmz), a family of microscopic plants, widely distributed in nearly all parts of the world. They were first discovered by O. F. Müller near the beginning of the last century, and by 1824 only 49 species were known. It is thought that not less than 9,000 species exist. For some time writers differed as to whether they should be classed with the vegetable or animal kingdom, but from a study of their general structure, and more especially their modes of reproduction, they are now universally classed as plants. The diatoms are common to most fresh and salt waters, and are devoured in large numbers as food by the lower forms of marine animals. When examined by the microscope, it is seen that the cells are solitary, or united into colonies, and each cell has a small shell or covering, which in many species is beautifully ornamented.


PORFIRIO DIAZ.

DIAZ (dē'äs), **Porfirio,** statesman and general, born in Oaxaca, Mexico, Sept. 15, 1830; died July 2, 1915. He studied law, but soon after joined the Mexican army in the war with the United States, in which he was highly distinguished by faithful service. In 1863 he became military governor of the state of Vera Cruz, holding that position until 1876, in which capacity he reformed civil service and suppressed several insurrections. He was commander of the army against France, was twice obliged to surrender and was sent to France, but escaped and took command of forces that overthrew Maximilian in 1867. When the republic was reëstablished in 1876, Juarez was elected president, but soon died and was succeeded by Lerdo de Tejado. In a revolution Diaz drove the latter from power and was himself proclaimed president by congress, in which office he served from May 5, 1877, to Nov. 30, 1880. His administration was distinguished on account of wholesome tariff and financial legislation, and extensive internal improvements, particularly canal and railroad building. He was again elected president in 1884 and was reëlected successively, practically without opposition, and in 1904 was chosen president for the seventh time. His government was marked by a vigorous policy, civil service reform, commercial growth, and educational advancement, and was admirably suited to the needs and conditions of the republic. Under it the country witnessed marvelous prosperity, and the stability and credit of the nation became assured. He resigned as president in 1911.

DICE (dīs), the plural of die, small cubes of bone, ivory, or serpentine stone, used in playing the game of dice. The faces are marked with a different number of points, from one to six, in such a way that the numbers on any two opposite sides count seven. In playing they are shaken and thrown from a box on a table, and the game depends upon the number of points presented by the upper faces. It is thought that the game was first used by the Lydians, and was played quite extensively among the Greeks, Egyptians, and Romans.


CHARLES DICKENS.

DICKENS (dĭk'ẹnz), **Charles,** famous novelist, born at Landport, England, Feb. 7, 1812; died June 9, 1870. He was the son of John Dickens, who was employed in the navy pay department. When Charles was nine years old, his father became reduced to straitened circumstances and was required to live in one of the poorer districts of London, where he was troubled by his creditors. Charles received a somewhat scanty education, was placed in a blacking warehouse, where he did drudgery, and later became clerk in an attorney's office. After a time his father's circumstances became improved and he returned to school, perfecting himself in shorthand for the position of a newspaper reporter. His early engagements were with the *Mirror of Parliament* and the *True Sun,* and in 1835 with the *Morning Chronicle,* in which the first series of the "Sketches by Boz" brought him to public notice. The following year his success was assured by the appearance of "Pickwick Papers," in which the humor and oddities of life are finely represented. Other works soon followed, among them "Oliver Twist," in which the conduct of workhouses was exposed. Soon after followed a denouncement of the cheap boarding schools in "Nicholas Nickleby," and later the weakness of home instruction in "Dombey and Son." After visiting America in 1842, his satirical accounts of American manners and life appeared in "Martin Chuzzlewit" and in "American Notes." Soon after his "Christmas Tales" delighted and attracted the interest of large circles of readers.

Dickens visited Italy in 1845 and on his return assumed editorial management of the *Daily News,* which he soon after gave up to publish his "Pictures from Italy." He became editor of the *Household Words* in 1850, in which several of his works appeared as serials, among them "A Child's History of England." He ceased its publication in 1859 and started *All the Year Round,* a similar periodical, in which a number of productions appeared, among them "A Tale of Two Cities," "Great Expectations," "Uncommercial Traveler," and "Our Mutual Friend." The last of his works was issued in 1870, entitled "The Mystery of Edwin Drood," but only three numbers appeared before his death at his residence near Rochester. He was buried in Westminster Abbey.

Dickens' works have been read almost universally. His writings deal with life as found among the lower and middle classes of society in his time. They are characterized by a constant flow of spirit, drollery, and pathos. He notices trifles that are unheeded by the ordinary observer and describes his characters so exquisitely that their names have become common phrases and household words. His readers are not only confined to English-speaking people, but are met with among other peoples into whose language his works have been translated. The popularity of Dickens in America was shown by an enthusiastic reception when he visited the United States a second time in 1867. His works not mentioned above include "The Old Curiosity Shop," "The Personal History of David Copperfield, "The Bleak House," "A Christmas Carol," "The Cricket on the Hearth," "The Battle of Life," "Barnaby Rudge," and "Little Dorrit."

DICKINSON, a city of North Dakota, county seat of Stark County, 115 miles west of Bismarck. It is nicely located on the Heart River and the Northern Pacific Railroad. The surrounding country is agricultural and stock raising. It has a number of fine school and county buildings, several churches, and a large trade in produce and merchandise. It is important as a grain shipping point and has a number of large elevators and lumber yards. Population, 1905, 3,188; in 1925, 4,467.

DICKINSON, Anna Elizabeth, orator and authoress, born of Quaker parents at Philadelphia, Pa., Oct. 28, 1842. Her first speech was made against slavery in 1857, before the members of a society of Progressive Friends. Later she spoke on temperance and politics, taught school, and in 1869 secured employment in the United States mint. She spoke in opposition to the election of Lincoln in 1864 and supported Greeley in the canvass of 1872. Her addresses delivered during the Civil War were especially patriotic. She appeared as an orator in many of the states in 1876, going upon the stage soon after, and wrote and acted with moderate success until 1888, when she resumed lecturing. A number of her works have been dramatized. Among her writings are "A Crown of Thorns," "What Answer?" "True to Herself," and "A Ragged Register of People, Places, and Opinions."

DICKINSON, Daniel Steven, statesman, born in Goshen, Conn., Sept. 11, 1800; died April 12, 1866. He began his life work as a clerk in a clothing store, taught school, was admitted to the bar, and settled at Binghamton in 1831. He was chosen United States Senator as a Democrat in 1844, and in 1861 was elected to the office of attorney-general of the State. Later he was district attorney for the southern district of New York and held other responsible positions. As a debater and orator he took high rank, supporting the conservative wing of his party.

DICKINSON, Donald McDonald, known as Don M., jurist and statesman, born in Port Ontario, N. Y., Jan. 17, 1846; died Oct. 15, 1917. He removed to Michigan when twelve years old, was educated in the public schools of Detroit and the University of Michigan, and was admitted to the bar in 1867. He entered politics in 1872 and took an active interest in the success of the Democratic party. President Cleveland appointed him Postmaster-General in 1886. He resumed the practice of law in Detroit at the expiration of his term.

DICKINSON, John, statesman, born in Talbot, Md., Nov. 13, 1732; died Feb. 14, 1808. He studied law in Philadelphia, where he entered upon the practice of that profession. In 1768 he published his celebrated "Letters to the Inhabitants of the British Colony by a Pennsylvania Farmer," in which he advocated the idea that Parliament had no power to tax the colonies. He was the first to use the term, "No taxation without representation." However, he opposed the Declaration of Independence in 1776, urging that the act was premature, and was among a few members of Congress who did not sign that document. He enlisted as a private when the war broke out and was afterward raised to the rank of brigadier general. In 1779 he was elected to Congress from Delaware and the following year to the Delaware Assembly, and afterward was made president of that body. He served as president of the supreme executive council of Pennsylvania from 1782 to 1785. In 1783 he founded Dickinson College at Carlisle, Pa., the second oldest educational institution in the State. It was under Presbyterian control until 1833, when it was transferred to the Methodist Episcopal Church. It has an endowment of $430,000. The buildings and equipments are valued at $500,000 and the library contains 45,500 volumes. The college contains advanced courses in the classics, sciences, and modern languages.

DICKSON (dĭk's'n), **Sir James Robert,** statesman, born at Plymouth, England, in 1832; died in 1901. He was educated at Glasgow, Scotland, and in 1854 removed to Australia, where he was elected to the Queensland House of Assembly in 1872. He held several important government positions, including that of Treasurer of the colony in several cabinets. In 1889-92 he lived in Europe, but returned to Australia in the latter year and took a prominent part in the government. He was made Premier in 1889, in which position he exercised a wide influence in advocating the establishment of the Commonwealth. In 1900 he was a delegate to London, and on returning to Australia was appointed Minister of Defense of the first federal Cabinet, but he died shortly after the new government was inaugurated.

DICTATOR (dĭk-tā′tẽr), the highest magistrate in the ancient Roman Republic. The dictator was an extraordinary magistrate, endowed with absolute authority, and it lay with the senate when the services of such an officer were necessary. The first dictator was appointed in 501 B. C., nine years after the Tarquins were expelled from Rome. Only those who had been previously consuls were eligible to the position. Originally the office could be filled only by a patrician, but later eligibility was extended to the plebeians. No one could legally hold the office longer than six months, but Sulla and Caesar were dictators for a longer period. The dictator had absolute power without any appeal, and his official acts could not be questioned by the senate. He was prohibited from leaving Italy, could not use the public funds, and was not permitted to ride on horseback without special permission from the people.

DICTIONARY (dĭk′shŭn-ȧ-rȳ), a book which contains a large list of words in any language, arranged alphabetically, and treated in a systematic order. The equivalent words in another language are usually given, with the spelling, pronunciation, etymology, definition, and other illustrative features. The term is frequently applied to works on special subjects, such as law, medicine, music, biography, etc. Dictionaries of the English language were first published in 1573 by John Baret, in 1616 by John Bullokar, and in 1755 by Dr. Johnson. Noah Webster published the first edition of his dictionary in 1828, and the "American Unabridged Dictionary" by Joseph E. Worcester was published about the same time. The dictionary of Webster is issued at present under a number of titles, including "Webster's International Dictionary" and "Webster's Imperial Dictionary." Among the newer dictionaries are the "Oxford English Dictionary," published in England, in 1888, the "American Encyclopaedic Dictionary" (1888), "The Century Dictionary" (1891), and "The Standard Dictionary" (1895). The last mentioned is among the largest, containing about 320,000 words. It is thought that the earliest German dictionary was published by Hrabanus Maurus, a contemporary of Charlemagne. The most extensive German work is that of Wilhelm Karl Grimm and in the French, that of Maximilien E. Littre.

DIDEROT (dē-d′-rō′), **Denis,** writer and philosopher, born in Champagne, France, Oct. 15, 1713; died July 30, 1784. He was educated for the ministry at the college of his native town. Later he studied at Paris, and, having a dislike for the ministry, he tried the law, but, finding that uncongenial, he became devoted to literature. His allowance was cut off by his father for refusing to become a lawyer or physician, which caused him to be reduced to financial straits and to seek employment as a tutor and writer for booksellers. Among his first works is a translation of the "History of Greece," which brought him the sum of $120. Soon after numerous works appeared that were objectionable to the clergy and the government, resulting in his imprisonment for some time at Vincennes. After gaining liberty, he wrote for the stage, but his productions proved failures. He united with D'Alembert in editing an extensive encyclopaedia. Originally his intention was to prepare it as a translation of foreign works, but later he enlarged it as an original production. In it appeared bold statements relating to public thought and scientific research.

The work on the encyclopaedia occupied the attention of Diderot nearly thirty years. It was, by reason of the special fitness and excellent education of the author, a literary production of much value and completeness, though it met with considerable opposition among some classes, who regarded a number of the articles atheistic. In the latter part of his life he was pressed for want of means and determined to sell his library, thereby providing for his only daughter. Empress Catharine of Russia, having heard of his intention, bought the library with the condition that the author himself should be librarian and receive an annual salary. Soon after he proceeded to Saint Petersburg to thank his benefactress, but on returning his health was impaired, from which he never fully recovered.

DIDO (dī′dō), the traditional founder of Carthage, who flourished about 880 B. C. She was the daughter of the King of Tyre, sister of Pygmalion, and wife of her uncle, Sichaeus, Soon after her brother ascended the throne of Tyre, he murdered Dido's husband, who was a priest of Hercules. Dido escaped with the treasures of Sichaeus, and, accompanied by many Tyrians, landed near the Phoenician colony of Utica in Africa, and built a citadel called Byrsa on a site bought from the Numidian king. The story is told that she purchased a tract of land that could be encompassed with the hide of a bull, and, after the agreement, she cut the hide into small strips and surrounded a large tract of ground, on which the mighty city of Carthage was built. Her untimely death has been assigned by Virgil to the circumstance that Aeneas deserted her and sailed to Italy, thus leaving her passions unrequited. However, it is generally thought that Dido founded Carthage fully 75 years before the founding of Rome.

DIDYMIUM (dī-dĭm'ĭ-ŭm), a metallic element discovered by Mosander in 1842, found chiefly in the mineral cerite. It is closely related to bismuth. Its chemical symbol is Di, and its anatomic weight is 145.4. Chemists have separated it into two elements, *neodymium* and *praseodymium.*

DIEFFENBACH (dē-ĕf'fen-bäk), **Johann Friedrich,** surgeon, born at Königsberg, Germany, Feb. 1, 1792; died Nov. 11, 1847. He studied at Bonn and Königsberg, traveled in France, and began a successful practice of surgery in Berlin. In 1840 he was made chief surgeon at the Charity Hospital, where he attained a reputation as an operator. He is the inventor of numerous new instruments and originated methods in forming artificial lips, noses, and eyelids. His methods of treating squinting and stammering have come into extensive use. Among his publications are "The Treatment of the Stammerers," "The Transfusion of Blood into the Veins," "A Treatise on Squinting," and "Methods of Cutting the Cartilage and Muscles."

DIES IRAE (dī'ēz ī'rē), the title given to a Latin hymn whose first line is "Dies irae, dies illa." Its authorship is generally credited to Thomas of Celano, a native of the kingdom of Naples, whose death occurred in 1255. The poem is dedicated to the last judgment, and was first published in Venice in 1250. Many of the eminent scholars of Germany translated it, among them Fichte, Schlegel, and Busenbaum. No religious poem has undergone as many translations in various languages, owing to the difficulty in producing its exquisite religious fervor. Several stanzas were introduced by Sir Walter Scott into his "Lay of the Last Minstrel," the first of which is as follows:

> The day of wrath! that dreadful day,
> When heaven and earth shall pass away.
> What power shall be the sinner's stay?
> How shall he meet that dreadful day?

DIESTERWEG (dēs'tĕr-vāg), **Frederich,** writer and educator, born in Siegen, Germany, Oct. 29, 1790; died at Berlin, July 7, 1866. After studying at the University of Tübingen, he became private teacher in Mannheim. He was elected professor in the secondary school at Worms in 1811, at Frankfort-on-Main in 1813, and director of the normal school at Mörs in 1820. Two years later he secured an election to the superintendency of the schools of Berlin, from which position he was relieved for political reasons in 1850. In 1858 he was elected to the Prussian Diet, where he was active in advocating educational reforms. Among his publications are "Life of Pestalozzi," "School Inspection," and "Text-Book of the German Language."

DIET (dī'ĕt), the name of several political bodies of Europe, corresponding to the Parliament of Great Britain and the Cortes of Spain and Portugal. It is derived from the Latin *dieta,* and signifies a day fixed for the national deliberations of public affairs. In this sense it is used to designate the Reichstag of Germany, the Riksdag of Sweden, the Rigsdag of Denmark, and the Rijksdag of the Netherlands. The word *diet* is frequently applied by English writers to the legislative assemblies of Germany, Austria, and Hungary.

DIET, the food commonly eaten to compensate for the waste of tissue and provide means for the growth and development. See **Food.**

DIFFRACTION (dĭf-frăk'shŭn), in physics, the deflection and decomposition of light, causing the appearances of parallel bands or fringes of prismatic colors. It occurs when light passes by the edges of opaque bodies or through narrow slits, as by the action of a grating of fine lines or bars. A glass screen, commonly called a *diffraction grating,* is used in physical laboratories to illustrate these phenomena. It consists of from 10,000 to 20,000 parallel lines to the square inch ruled on glass, and as the light passes through brilliant spectrum colors result. A diffraction grating made by ruling lines on speculum metal produces a similar effect by reflecting the light from the polished and ruled surface. Such gratings are used in place of the prism in spectroscopic work, and with them it is possible to obtain spectra of wide dispersion. The spectrum given by the grating is called the *normal spectrum,* since in it the distribution of the different wave lengths is uniform. Diffraction gives rise to the play of colors seen in mother-of-pearl and the feathers of some birds.

DIFFUSION (dif-fū'zhŭn), the property possessed by liquids of intermingling with each other when brought in contact. It may be illustrated by placing water colored with blue litmus into a glass jar, and then pouring a small quantity of sulphuric acid, by means of a thistle tube, into the bottom of the jar. The acid will change the blue of the litmus to red wherever they come into contact. If the jar remains in a quiet place, the acid will intermingle with the litmus solution, and after a short time the entire contents of the jar will be red. Diffusion is more rapid where the surfaces of the two liquids are increased, as by placing them in a shallow vessel, or by stirring with some solid object, such as a spoon or a glass rod. Alcohol and water mix readily when placed together in a vessel, but water and mercury or oil and water do not mix, since there is no adhesion between their molecules. This may be illustrated by pouring oil and water into a bottle and shaking thoroughly, after which the two will separate into two distinct layers, the separation being nearly perfect. Diffusion takes place between gases, which may be demonstrated by filling two flasks, one with chlorine and the other with hydrogen, and connecting the two by means of a long tube through the corks fitted tightly into their necks. There being a difference between the color of chlorine and hydrogen, it is possible to observe the diffusion with the eye as the intermingling takes place.

DIGESTION (dĭ-jĕs′chŭn), the process by which foods are converted into soluble and diffusible products, capable of being absorbed by the blood. It may be said to begin in the mouth, where the solids are broken into small pieces, moistened with saliva, mixed with air and saliva, and formed into a bolus for swallowing. The saliva, by its active principle known as *ptyalin,* changes some of the starch at once into sugar. The glands of the stomach are excited to activity by the entrance of food, which has been made somewhat alkaline by the saliva and mucus, and the presence of acid lessens or stops the action of the ptyalin. A slight churning process in the stomach thoroughly mixes the ingredients, which are subjected to the action of pepsin, the active principle of the gastric juice. The starches and fats are loosened, the protoplasm is dissolved, and the proteids are converted into peptones. Food is acted upon in the stomach from three to four hours, depending upon its quality and quantity, as well as upon the condition of mind and physical health, both of which exercise a marked influence.

The partly digested food which passes from the stomach through the pylorus into the duodenum is known as *chyme,* and is a grayish liquid and is mixed somewhat with large lumps. By the action of the bile, the pancreatic juice, and the intestinal secretions, in the small intestines, the starches are converted into sugar and the remaining proteids into peptones, and the fats are made into an emulsion, or a soapy substance. The digested food, known as *chyle,* is absorbed by the portal blood vessels and by the lacteals. The contents that pass into the large intestine again become acids, owing to fermentation, and a small amount of cellulose is digested. The absorption of the liquids contained in the fluid mass is an important function of the large intestine.

DIGHTON ROCK (dī′tŭn), a large mass of granite on the east bank of the Taunton River, near Dighton, Mass. It is remarkable for an inscription deeply cut with mysterious characters and has been the subject of much discussion among antiquarians. Mention was made of it by colonists as early as 1730. Some writers have expressed the view that the inscription was made by the Norseman in 1008, while others regard it the product of Indians.

DIJON (dē-zhôn′), the capital of the department of Côte d'Or, France, on a plain near Mount Afrique, 1,915 feet above sea level. It is conveniently located on a number of railroads and electric railways. The noteworthy features include a Gothic cathedral with a spire 300 feet high, dating from the 13th century. Other noted structures are the Church of Saint Michael, the theater, and the university. The public hall was begun in 1366 and served as a palace of the Burgundian dukes. It has an excellent museum, a library with 85,000 volumes, and several institutions of advanced learning. Among the manufactures are hosiery, chemicals, cotton and woolen goods, leather, machinery, and the celebrated Dijon mustard. The Romans knew the city as Dibia. It passed from Burgundy to France in the 5th century, was ruled by counts in the 9th century, and was united to the duchy of Burgundy in 1007. After the death of Charles the Bold it became a French possession. The German army occupied it in 1870. Population, 1922, 78,113.

DIKE (dīk), in geology, a wall of trap or some similar form of igenous rock, which traverses other rocks, and appears to have been produced by the flowing of melted matter into a deep rent or fissure. Dikes differ from veins in being larger, and in their contents having greater uniformity. They frequently project above the surface like a wall, owing to the rocks around them being somewhat softer. In thickness they vary from a few inches to a mile. Dikes that occur between the layers of a sedimentary formation are called *intrusive sheets.* They consist chiefly of basalt and quartz porphyry. Dikes are found in volcanic regions and are widely distributed.

DILEMMA (dĭ-lĕm′mȧ), in logic, an argument which contains two or more alternatives, equally conclusive against an opponent which ever alternative he chooses. A person who is confronted by a dilemma must admit one or the other, hence is said to be caught between the horns of a dilemma. The following dilemma may serve to convey a clearer notion than could be formulated in a definition: "If this man were wise, he would not speak irreverently of Scripture in jest; and, if he were good, he would not do so in earnest; but he does it, either in jest or earnest; therefore, he is either not wise, or not good."

DILKE (dĭlk), **Sir Charles Wentworth,** statesman, born at Chelsea, England, Sept. 4, 1843; died Jan. 26, 1911. He studied at Cambridge, was admitted to the bar, and made tours in 1866-77, visiting various parts of Asia, the United States, and Canada. After returning to England, he published a record of his travels under the title "Greater Britain." He was elected to Parliament from Chelsea in 1868, where he allied himself with the Radicals in politics, and was charged with holding republican opinions rather than favoring a constitutional monarchy. He held the office of Undersecretary for Foreign Affairs and was President of the Local Government Board, with a seat in the Cabinet of Gladstone. He was defeated for reëlection to Parliament in 1886 on account of an exposure of the Crawford divorce case, in which he was named as a corespondent, and soon after devoted himself largely to travels and literary work. He was returned to Parliament in 1892. Among his publications are "The British Army," "European Politics," "The Eastern Question," "Parliamentary Reform," and "Imperial Defense."

DILLON (dĭl'lŭn), **John,** Irish statesman, born in Blackrock, Ireland, in 1851. He was educated at the Catholic University of Dublin, was elected to Parliament in 1880, and was an active supporter of the Parnellites, on account of which he was suspended along with others of the Parnell party. His resignation in 1883 was followed by a reëlection in 1885, and again the following year. Later he traveled in Australia. After returning to Great Britain, he was arrested on a political charge. His bail was forfeited and he escaped to the United States. He returned in 1891 and declared himself in favor of Mr. Parnell's retirement. Later he was again elected to Parliament and held a conspicuous place among the representatives of Ireland.

DINAPUR (dē'nä-po͞or), a city of British India, in the province of Behar, twelve miles northwest of Patna. It is nicely situated on the Ganges River and a railroad, and has strong fortifications. The surrounding country is fertile, producing cereals and fruits, and the city has a large trade in produce and merchandise. In 1857 it was the scene of a mutiny. Population, 1922, 35,046.

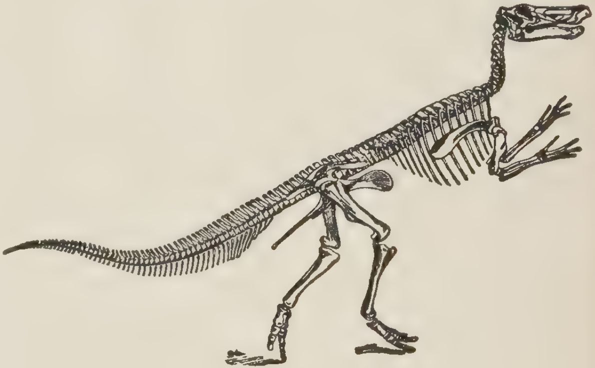
DINARIC ALPS (dē̍-năr'ĭk), a mountain range in southwestern Austria, trending parallel to the coast of the Adriatic Sea. It forms a connecting line between the western extremity of the Balkan Range and Mount Klech, at the southern extremity of the Julian Alps. The highest peak, Mount Dinara, is 6,010 feet above sea level.

DINGLEY (dĭng'lĭ), **Nelson,** statesman, born in Durham, Me., Feb. 15, 1832; died Jan. 13, 1899. He entered the Waterville College in 1851, and graduated from Dartmouth in 1855. Though admitted to the bar, he did not practice law, but founded the Lewiston *Journal,* becoming its editor. He was elected a member of the Maine Legislature by the Republicans in 1862, 1863, 1864, 1868, and 1873, after which he served as Governor of Maine for two terms, and was a delegate to the national convention in 1876. In 1881 he was elected to Congress to fill a vacancy and the next year for a full term, serving in Congress consecutively until 1899. By his speeches in favor of high protective tariff the way was paved for the McKinley tariff law of 1890. He opposed the enactment of the Wilson law in 1894, and framed the tariff schedule that bears his name, which became a law in 1897. Bates College and Dartmouth granted him honorary degrees on account of ability as a speaker and writer. The value of his service in Congress was generally recognized by his party.

DINGO (dĭṉ'gō̍), the wild dog of Australia, thought to have originated from a breed of the domestic dog. It is from two to three feet long and about two feet high, and has an appearance somewhat resembling that of a wolf. The color ranges from pale brown to black, usually with tawny markings, the ears are erect, and the tail is bushy. In a wild state it utters a howl like a wolf, but when domesticated it soon learns to bark when placed in company with other dogs. The natives have domesticated the dingo and use it in hunting, but also hunt wild dingoes for their flesh, which they prize as an article of food.

DINORNIS (dī-nôr'nĭs), a genus of extinct birds of the ostrich family, fossil remains of which are found in New Zealand. It is reasonably certain that six species existed and that the largest specimens had a height of from twelve to fourteen feet. They were stupid and indolent, incapable of flying, and subsisted on vegetable food. Fossils are found in the deposits of the post-Pliocene period.

DINOSAURIA (dī-nō̍-sa̤'rĭ-ȧ), a group of large fossil reptiles, classed with the extinct lizards. Remains of these animals are found in the Jurassic system of rocks. They resembled the crocodile on the one hand and the birds on the other, and most of the species walked on their hind legs. To this group belonged the claosaurus annecteus, a birdlike animal whose body was thirty-five feet long. The smallest of the group were three feet long, while the largest, such as the megalosaurus, attained a length of forty to sixty feet. This animal was carnivorous, feeding on the animals that lived in the haunts it frequented, but the iguanodon was herbivorous.



CLAOSAURUS ANNECTEUS.

DINOTHERIUM (dī-nō̍-thē̆'rĭ-ŭm), a genus of extinct mammals allied to the modern elephant and the extinct mastodon. Fossil remains are found in the Miocene and Pliocene rocks of Europe, in the region lying between Greece and northern Germany. They had no tusks in the upper jaw, but two tusks projected downward and slightly backward from the lower jaw. It is thought that these animals did not inhabit America, but they were in Southern Asia, from Asia Minor to India.

DINWIDDIE (dĭn-wĭd'dĭ), **Robert,** colonial Governor of Virginia, born in Scotland about 1690; died in Clifton, England, Aug. 1, 1770. His appointment as Lieutenant Governor of Virginia in 1752 was due to his prompt exposure of frauds committed by the collector of customs in the West Indies. However, his ill temper and avarice made his rule unpopular. The taxation of American colonies was first suggested by him to the British board of trade. No native-born officer in the army was permitted to hold higher rank than captain, which caused Washington to resign from its service. He returned to England with much wealth in 1758, but never accounted for it satisfactorily.

DIOCLETIAN (dī-ō-clē'shạn), **Valerius Diocletianus,** Emperor of Rome, born in Dalmatia in 245 A. D.; died in 313. His reign extended from 284 until 305. He was of humble birth, adopted a military career, and served with distinction under emperors Probus and Aurelian. The army proclaimed him emperor after the death of Numerian. He defeated Carinus in 286. The dangers threatening Rome compelled him to divide the government with Maximian, and he appointed Galerius and Constantine as subordinate rulers with the title of Caesar. Each ruler governed a distinct region from different capitals. He resigned in 305, owing to overwork, and retired to Salona, in Dalmatia, where he died.

DIOGENES (dī-ŏj'ē-nēz), celebrated Greek philosopher, born in Asia Minor about 412 B. C.; died near Corinth about 323. He was the son of a money changer in Sinope, and, the two having been detected altering coins, both were required to leave their native city. Diogenes proceeded to Athens with a single attendant, whom he discharged, and later denuded himself of superfluous furniture, dress, and other articles. It is told that he possessed nothing but a cloak, wallet, and a wooden bowl, the latter of which he threw away when he saw a boy drinking from the hollow of his hand. He was attracted to Cynosarges and sought admission as a pupil of this great teacher, which was granted after prolonged entreaty. To render himself capable of enduring the elements, he embraced snow-covered statues in winter and rolled himself in the hot sand in the summer.

On making a voyage to Aegina, Diogenes was captured by pirates and sold in Crete as a slave. His purchaser took him to Corinth to superintend the education of his children, where he soon became famous on account of his learning. Great crowds were attracted by his teaching at the Isthmian games. His fame attracted, among others, Alexander. When that great Grecian sought to reward him for his interest in learning and asked what favor he could render, the reply was that he would beg the prince not to stand between him and the sun. In response Alexander replied, "If I were not Alexander, I would be Diogenes." According to the popular story, Diogenes walked barefooted through the streets of Athens and at night slept in a tub, a large earthen vessel. Some time after his death at Corinth a pillar was erected to his memory.

DIOMEDES (dī-ō-mē'dēz), the son of Mars and Syrene, and King of the Bistones in Thrace. He is celebrated for his mares, which he fed upon human flesh. To obtain possession of these mares was one of the twelve labors of Hercules, who slew Diomedes and fed his body to the mares, after which they became docile. Another Diomedes, son of Tydeus, was a prominent figure in the Trojan War. He was a favorite of Minerva and aided Ulysses in carrying off the Palladium of Troy.

DIONYSIUS (dī-ō-nĭsh'ĭ-ŭs), **The Elder,** an ancient tyrant of Syracuse, Sicily, born about 430 B. C.; died in 367. His life was begun as a clerk in a public office, and he first took part in political affairs after the destruction of the Athenian expedition against Syracuse. During the invasion by the Carthaginians he was general in the army of Syracuse, which possessed a republican form of government at that time. He became ruler of Syracuse in the year 405, after the Carthaginian army had been thinned by pestilence. Subsequently he conducted a number of expeditions against the Carthaginians, gaining several victories, and extended his rule over other cities in Sicily. Later he completely crushed the Carthaginians near the walls of Syracuse and directed his efforts against Carthage. His success in war made him one of the most celebrated military men of his time. Besides aspiring to military renown, he sought to obtain poetical glory and wrote several lyrics and tragedies. A number of his productions were hissed at the Olympic games, but a tragic poem gained a prize at Athens. His reign of 38 years is generally described as efficient, leaving at his death a powerful empire and immense military stores.

DIPHTHERIA (dĭf-thē'rĭ-ȧ), a blood disease characterized by a false membrane composed of elastic fibers, found chiefly on the pharynx, tonsils, nostrils, palate, tongue, and gums, and sometimes on the oesophagus. The membrane is of an ashy color and leaves a bleeding surface when detached, often terminating in blood poisoning. It is a disease of all ages, spreads by contagion, and is highly dangerous. It frequently accompanies typhoid fever, croup, and scarlet fever, the chances of recovery in such cases being very doubtful. The fatality has frequently been as high as ninety per cent. in past years, but with the newer modes of treatment it has been materially reduced.

The treatment in diphtheria is both constitutional and local, in which iron, chloride of potash, cinchona bark, and quinine are largely employed, though carbolic acid, glycerin, and chlorine are used more or less extensively. The newer method is to use antitoxin in the treatment. In aggravated cases a tube is employed, through which the patient is enabled to breathe while the soreness and swelling are greatest. Accurate reports made in 1900 show that the mortality has been reduced very largely by the use of this remedy. In 1900 it was estimated that the death rate in Paris was thus reduced from 72 to 12 per 1,000 population; in Berlin, from 125 to 32 per 1,000; and in New York, from 187 to 45 per 1,000. It is estimated that fully 1,150 lives were saved in Chicago in the two years 1899-1900. This estimate is fully borne out by the experience in London in 1908. See **Antitoxin.**

DIPHTHONG, the union of two vowels which are pronounced together in one syllable, with one impulse of the voice, as in *out, soil,* and *lou.* The term *improper diphthong* is applied to a word in which two vowels are written together, but only one representing a sound, as in *beat, bean,* and *bread.* Many diphthongs in modern English were developed from monophthongs, or simple vowel sounds, as the modern *mouse,* which was derived from the old English *mus.*

DIPLOMACY (dĭ-plō′mȧ-sĭ), the term applied to the art of negotiating and arranging treaties between nations. This branch of knowledge relates to the forms of international negotiations, the relation of independent states to one another, and the management of envoys accredited to foreign courts. Intricate diplomacy like that of modern times did not exist in the nations of antiquity for the reason that the scope of civilization was often confined within the limits of a single empire. In Greece, Rome, Persia, and other ancient nations political agents were employed to discuss national affairs. The primitive movement in bringing about the regular intercourse existing between civilized powers has been accredited to the efforts of Cardinal de Richelieu, though the representatives sent by the Florentine republic to Charles V. tends to show that he was not the first to perceive the benefits to be derived from such a system. Among the diplomatic agents recognized are ambassadors, envoys extraordinary, ministers plenipotentiary, ministers resident, *charge d'affaires,* secretaries of legation, and *attaches.* The powers and dignities of these agents are graded successively in the order named.

DIPPER (dĭp′pẽr), a bird of the thrush family, but quite similar in appearance to the wrens. The bill is sharply pointed and almost straight, the plumage is compact, and the tail turns slightly upward. Several species are noted for their song. They live near the banks of streams and the shores of lakes, and feed on mollusks and aquatic insects. The dippers are so named from their habit of dipping the head, which is accompanied by an abrupt upjerking of the tail. Several species are found in the highlands of the United States and Canada, and others frequent many parts of Asia and Europe.

DIPPING NEEDLE, an instrument to test the magnetism of the earth at different places. It consists of a magnetic needle supported by a stirrup or within a frame so as to be free to move vertically. When placed horizontally and then magnetized, the needle will not remain horizontal, but will dip toward the nearer pole of the earth. The angle of dip decreases as the distance from the magnetic equator increases. There is no dip at the magnetic equator, but the needle will assume a vertical direction at the magnetic poles, hence the distance increases from zero to ninety degrees.

DIPSOMANIA (dĭp-sô-mā′nĭ-ȧ), the morbid craving for alcoholic drinks, classed as a form of insanity. The attacks are periodical and when they occur the patient has an uncontrollable desire to drink excessively, but during the intervals he seems mentally sound and may abstain entirely from the use of liquor. The disease has been treated successfully in asylums for the inebriates. Institutions of this kind are maintained successfully in many states and countries.

DIRECTORY (dĭ-rĕkt′ô-rȳ), the name applied to the government in France which was established by the constitution of Aug. 22, 1795. This body was composed of five members, who ruled in conjunction with two chambers—the Council of Ancients and the Council of Five Hundred. It was deposed by Napoleon Nov. 9, 1799, who assumed the government with Charles F. Lebrun and Jean J. Cambacérès as three consuls, on Dec. 15, 1799, his office being that of first consul.

The name directory is applied to a book which contains the names of the inhabitants of a city or district. Directories are published at frequent intervals. In them the names of citizens are given in an alphabetical order, together with the place of abode and business or profession of the individual. Various directories are issued by the government, the principal and most used work of this kind being the "Official Postal Guide." Such a directory contains a list of all the post offices, giving the counties and political divisions in which they are located.

DISCOUNT (dĭs′kount), a deduction from a sum of money due at a future date, or from the price at which a commodity is generally sold. Banks usually deduct a small per cent. from the face of a note when purchasing such a paper, called *bank discount,* and this deduction is an item of profit in addition to the rate of interest specified in the note. When a loan is made to a customer by a bank, it is quite usual to deduct the interest in advance, hence the person borrowing receives a sum slightly less than the face of the note he gives at the time the loan is made. Merchants usually get a discount from the wholesaler when they pay cash within ten days from the date of shipment, or a smaller discount if they pay within thirty or sixty days, and quite frequently the merchant has a similar system in giving his customers a small discount where a bill is paid cash or within a short time. Deductions of this kind are said to be based on trade or commercial discounts.

DISEASE (dĭz-ēz′), a state of ill health, usually applied to the absence of health from all causes except old age. *Organic* diseases arise from an unhealthy condition of the organs of the body, while *functional* ailments are due to causes which prevent the organs from doing their work properly, though they may be sound. Diseases may exist without pain or uneasiness in the ordinary meaning of these words, but hardly without functional disturbance or incapacity of some kind. Bacteria, sudden exposure, and foreign substances that cause poisonous products within the body are among the prolific causes of physical ailments. Diseases are either *diathetic* or *enthetic,* the former arising from predisposition and the latter from without the patient.

DISEASES OF PLANTS, the ill health of plants, which causes their death or interferes with their normal development. The importance of this topic has been developed under a systematic study of plant life, and writers have become able to group and treat plant diseases with a high degree of accuracy. They are usually classified according to their causes, which are fungi, insects, bacteria, and physiological. The *fungi* include such diseases as mildews, grape rot, potato rot, and the smuts and rusts of grains. Diseases of this kind are spread by minute spores, which are carried from plant to plant by insects, by the wind, and by other agencies. The plant on which they lodge is attacked, if the conditions are favorable, and the diseases make rapid progress when they are developed, causing either death or decay of a part or of the entire plant.

The diseases due to *insects* are numerous, especially in the forests and orchards. The phylloxera (q. v.), a prolific cause of disease among grapes and orange trees, is much dreaded in many parts of Europe. Carnations and many other flowering plants are attacked by the aphides, and eelworms attack the roots and cause galls in many economic plants. Diseases due to *bacteria* include the black rot of cabbage, the blight of apples and pears, and a wilt disease in cucumbers and melons. *Physiological* diseases are due chiefly to unhealthful conditions that surround the plants, such as unsuitable light and heat and improper nutrition. Plants subjected to ill health from these and similar causes turn yellow and rarely develop their fruit.

DISMAL SWAMP, a tract of marshy land located in North Carolina and Virginia. Formerly it was forty miles long and twenty miles wide, but it has been reduced somewhat by draining. It is covered largely with trees, consisting mostly of cypress, juniper, and cedar, with dense brushwood underneath. In the most elevated portions oak and beech trees abound. Canals have been constructed through it, being utilized for shipping timber for the manufacture of railroad ties, lumber, and shingles. Lake Drummond, six miles in length, is a sheet of water in the midst of the swamp. A navigable canal connects this region with Albemarle Sound and Chesapeake Bay.

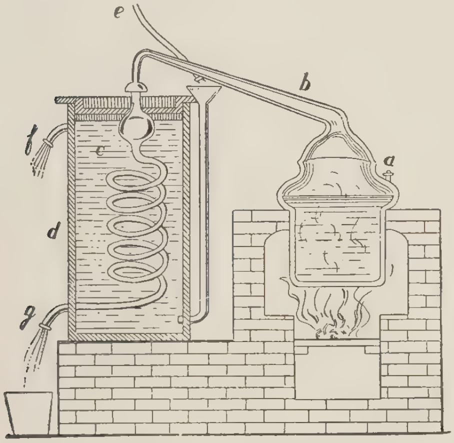
DISRAELI (dĭz-rā′lĭ), **Benjamin.** See **Beaconsfield.**

DISRAELI, Isaac, author, father of the Earl of Beaconsfield, born in Middlesex, England, in 1766; died Jan. 19, 1848. He was educated at Amsterdam and Leyden and began a career as a poet and novelist, but soon after devoted himself to historical work. His writings are instructive and noted for elegance in style and pleasing characteristics. Among his principal works are "Curiosities of Literature," "Inquiry into the Literary and Political Character of James I.," "Life and Reign of Charles I.," "Essays on the Manners and Genius of the Literary Character," and "Amenities of Literature." The greater portion of his life was spent in library research. Oxford granted him an honorary degree, while Lord Byron spoke of him as "that most entertaining and searching writer."

DISTAFF (dĭs′tạf), a simple instrument used in spinning, employed extensively by the people in ancient times. It is in the form of a staff, on one end of which the wool was rolled. The spinner held it in the left hand while the right hand was occupied in drawing out the fibers of the wool and at the same time twisting them. A small piece of wood called a *spindle* was attached to the thread, the weight of which continually carried it down as it was formed. When the spindle reached the ground it was unfastened, the thread which had been formed was wound around it, and it was then again fastened near the new thread. A modified form of the distaff is still used by the peasants of Greece. The Fates are represented in ancient and modern art with the distaff, with which they are busied spinning the thread of life.

DISTEMPER (dĭs-tĕm′pẽr), a mode of painting, in which the colors are coarser than those used for higher artistic purposes, and are mixed in a watery glue, such as sizing and whiting. Formerly it was employed in the higher departments of art, but now it is used chiefly in making wall paper and in scene painting.

DISTILLATION (dĭs-tĭl-lā′shŭn), the process of heating solids or liquids in a retort or vessel so constructed that the vapors thrown off are collected and condensed. A representation of the apparatus used is shown in the accompanying illustration. The retort or vessel, marked *a* in the figure, is called the body of the still, in which the vaporization takes place, and from it the vapor is carried by pipe *b,* to the refrigerator, which is cooled for condensing purposes by a stream of cold water flowing in through pipe *e,* and out through pipe *f.* The worm tub *d* contains the coiled tube, or worm *c,* in which the condensation takes place, and the distilled liquid flows out at *g.* Distillation is of great value in manufactures and the arts. It enables the chemist to obtain pure or distilled water. Sea water can be rendered wholesome by distillation, while essences and volatile oils may be extracted from plants by this process with alcohol or water. It is utilized most extensively in manufacturing alcoholic spirits. In the process of manufacture a wort is prepared from malt or some other substance at a temperature not above 160° Fahr. After separating it from the grain and cooling, a quantity of yeast is added. Fermentation takes place readily at about 65° Fahr., in which process the saccharine matter of the wort is resolved into carbonic acid and alcohol, the latter remaining in the liquid. The alcoholic mixture is run into a still as soon as the liquor ceases to ferment and submitted to distillation.



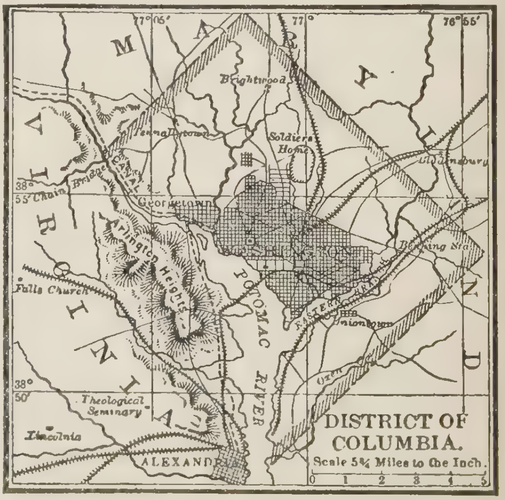
DISTILLING APPARATUS.

The character and strength of the distilled product depend upon the construction of the still; the first distillation is quite weak, while the second has the effect of greatly strengthening it. In the process the easily vaporized parts are separated from the rest and retain the flavor of the juice from which they are made. The malt liquor is flavored with the essential oil of barley, rum with the oil of the sugar cane, brandy with the oil of the grape, and gin with the oil of the juniper.

Destructive distillation differs from the process described in that the temperature is raised sufficiently high to decompose the substance, and bodies are produced that do not exist in the original matter. The substances are subjected to the action of intense heat out of contact with the air. It is variously conducted, and for widely different purposes in the same or different substances. Wood is distilled partly to secure charcoal and partly for the tar and pyroligneous acid. Coal is distilled to obtain the gas, anthracene, benzole, and ammoniacal water, and sometimes to secure the fixed carbon or coke. In the distillation of bones the charcoal and oil are collected. Shale is submitted to the process solely to obtain the oil.

DISTRICT OF COLUMBIA, a Territory of the United States, located between Virginia and Maryland, on the east bank of the Potomac River. The area is 64 square miles. It has a gently rolling surface, except along the Potomac, where flat and marshy tracts occur. The southern part is crossed by the Anacostia River, which flows into the Potomac, and the northern part is traversed by Rock Creek. About one-fifth of the surface is in farms and gardens, although the soil is light and sandy. The remainder is occupied by the city of Washington, Uniontown, and a number of villages. Fruit, flowers, hay, and vegetables are the chief products.

Originally the District of Columbia contained 100 square miles, of which 64 were ceded by Maryland in 1788 and 36 by Virginia in 1789. It received the official name of the Territory of Columbia in 1791, and the capital was removed thither in 1800. The portion south of the Potomac was given back to Virginia in 1846; thus it lies wholly east of that river. Congress administered the affairs of the district prior to 1871, but in that year it was placed upon a territorial basis. Henry D. Cooke served as Gov-



ernor from 1871 to 1873, and Alexander Shepherd from 1873 to 1874. Since 1874 the government has been vested in the hands of a local corporation, with an executive branch consisting of three commissioners, one of whom must be an officer of the engineer corps and the other two are appointed by the President of the United States. Subordinate municipal officers are appointed by the commissioners, while the recorders, justices of the peace, and judicial officers are appointed by the President.

The inhabitants are centered very largely in the city of Washington and the villages are properly suburbs. Though Georgetown was formerly a separate corporation, it has been a part of Washington since 1878. In 1900 the total population was 278,178. Of this number 218,196 were in the old limits of Washington; 14,529, in the old limits of Georgetown; and 45,973, in the remainder of the district. In 1905 the population was 323,143, including 95,695 negroes. Population, 1920, 437,571. See **Washington.**

DIVERS (dī'vẽrs), a family of swimming birds remarkable for their power and habit of diving. They are known by their webbed toes, short and rounded tail, short wings, and straight, strong, and pointed bill. In flight they are remarkably rapid, and their movement under water is speedy and well directed. They pursue fish for food by moving rapidly, propelling themselves by their feet and wings, and frequently remain under water for some time before emerging. Divers are most common in the north, where they breed in the summer, and they move southward in the autumn. Large numbers are found in Northern Europe and America. The *great northern loon* of Europe is the largest of the various species, being nearly three feet long. It and several closely allied birds are valued for fine plumage.

DIVIDE (dĭ-vīd'), or **Watershed,** in physiography, the crest line which divides the slopes of two drainage systems Divides are characterized by various physical features, ranging from the low watersheds in regions slightly elevated above the sea to the crest lines of mountain systems, where the slopes are usually quite abrupt or precipitous. However, gentle slopes are abundant even in regions elevated greatly above sea level. North America has three marked divides, those of the east, of the central part, and of the west. The Appalachian Mountains, in the eastern part of the United States, form the divide between the rivers of the Atlantic coastal plain and those flowing into the Mississippi from the west. The Height of Land, situated in the north central part of the United States, is the watershed between the northern section of the Mississippi valley and the rivers of Central Canada, and the Rocky Mountains, in the western part of North America, separate the headwaters of the streams flowing into the Pacific from those of the central part of the continent. In some places the divides are low and channels are cut through them by streams, causing them to change their direction, while in others a slight overflow occurs only during high water. Instances of this kind occur in the Des Plaines River, Illinois; the Twin River Lake, Yellowstone Park; and the Cassiquiare River, South America.

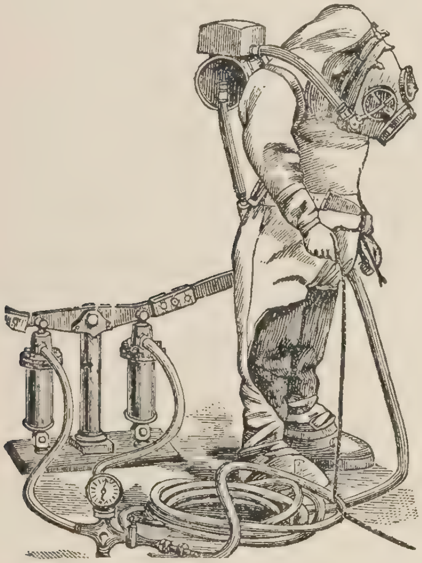
DIVINATION (dĭv-ĭ-nā'shŭn), the art of foretelling future things by revelations from oracles or omens. Those who profess the power to divine or foretell future events rely upon observing the flight of birds and clouds and the movement of the planets, or base their belief on the influence of spirits or supernatural causes. Various forms of divination were practiced by the ancient Romans and Greeks, who probably came to believe in the art from the practices which prevailed in Egypt and Chaldea. The laws of Moses prohibited it among the Israelites, who were not permitted to perform any kind of divination. The medicine men among the Indians of America practiced it to some extent, and it still has adherents in some countries.

DIVINE RIGHT OF KINGS, the claim made by some sovereigns that they hold their office by divine appointment. According to this view, they assert the right to govern their subjects without interference, opposition to the government being regarded in the light of a sin. This doctrine was held by numerous English sovereigns and princes, especially in the time of the Stuarts. It is a tenet pleasing to despotic rulers, and proportionally displeasing to the mass of their subjects. It is spoken of by Pope in these words, "The divine right of kings to govern wrong."

DIVING (dīv'ĭng), the art of descending and remaining for a certain period of time under water, especially when using a diving bell. As an art diving is important, being highly serviceable in fishing for pearls, sponges and corals, and in examining the bottom of rivers and the sea. It is utilized largely for engineering purposes, recovering valuable stores of sunken ships, and raising or removing sunken vessels. A skillful diver may remain under water from two to three minutes without the aid of artificial appliances. This form of diving was practiced in early times near the shore, but has gone largely out of use. In order to do effective service, it is necessary to supply the workman with apparatus by which fresh air can be conveyed in sufficient quantities to enable him to remain under water for some time. This is done successfully by various appliances.

The diving bell, though used in quite ancient times, was first made of material value in the 18th century. It is so named from its form, being shaped like a bell. The principle employed may be illustrated by inverting a tumbler and pressing it down into a vessel of water. While the water rises to some extent in the tumbler, yet the upper portion remains perfectly dry, and in it a candle will burn for a short time with even increased energy, on account of the air being condensed by pressure. The diving bell is connected above the surface of the water by flexible pipes, making it possible to inject pure air by a force pump, while the impure air escapes at the upper part of the bell by a cock. It is generally made of cast iron, containing strong convex lenses in the roof or upper side for the admission of light to the person within and is suspended by chains from a vessel above. In the newer forms are provisions by which the workmen may move the apparatus or raise or lower it at pleasure.

A waterproof diving dress is another appliance used by divers. It is made of India rubber cloth inclosing the entire body, except the head. The head is covered by a helmet containing three eyeholes covered with glass and protected by guards. An air pump above supplies air by means of a flexible tube connected with the helmet and the impure air passes off through another flexible tube to the surface of the water, though in some the air escapes through a valve. The diver sinks to the bottom by leaden weights attached to the soles of the shoes or to the feet. A speaking tube enables him to converse with those above quite as conveniently as through a telephone. Recently an apparatus utilizing compressed air has been introduced. In this form the air is supplied by means of a self-regulating device corresponding to the water pressure. This and other classes of diving apparatus frequently have an appliance attached by which bubbles indicate the condition of the diver, and assistants stationed at the top are informed of his safety. A diver rarely remains under water more than an hour and a half, and about 150 feet is usually the greatest depth at which extensive work can be conducted with safety.



DIVING DRESS AND TUBES.

DIVISION OF LABOR, the term applied in the industries to a classification of the work done by the workman. The more or less clearly defined inclination in each individual, especially so far as it relates to occupation, and various desires in different persons, have led to the modern diversification in trade and industry. The consequent division of labor has given to modern industries enlarged and enormous productiveness. It has been found that a given number of persons can produce a greater total of wealth by confining themselves individually to one thing than if each person worked by himself, endeavoring to produce everything he desires.

To illustrate the advantage, each man of a thousand working by himself might produce a coat, a barrel of flour, and a pair of shoes in a certain time, and the one thousand men might produce one thousand of each of these articles. However, if each one-third of the men devoted themselves to the production of one of the three different commodities, the output would be considerably larger. In this way a workman, producing more than one thing which others want, can get in exchange more of the things he himself wants, and in the end be the producer of vastly greater quantities of wealth. This principle has been acted upon to such an extent that a great diversity of occupation has been caused in every community, and by means of it the necessity of greater exchange has been created.

Among the several advantages coming from the division of labor may be enumerated economy of time, strength, skill, and tools. Besides, it facilitates economy of material and supplies, and improves, diversifies, multiplies, and cheapens the product. The general improvement in tools and machinery may be largely attributed to the principle underlying it, and the massing of labor and capital has likewise resulted, though it has had the effect of limiting somewhat the usefulness of the workman as an all-round laborer.

DIVORCE (dĭ-vōrs'), the partial or total dissolution of a previously contracted marriage. The former constitutes the judicial separation of the two parties, while in the latter the marriage itself is set aside. The ancient Spartans rarely granted divorces, while the Athenians and other Greeks allowed them frequently for trivial causes. During the early epoch of Roman history divorce proceedings were extremely rare, though in the later period, especially in the republic, they became common. The right to institute divorce proceedings in the Roman court was vested both in the husband and wife. The Scriptures limit the separation of husband and wife to very narrow channels, while in the

Catholic theology marriages are indissoluble, though special dispensations have been granted in exceptional cases.

General provisions were made for the legal separation of husband and wife in the early history of the American colonies. All the states followed this course with the single exception of South Carolina, where divorces are not granted by law. The proportion of divorces to marriages in the United States is about one to seven. However, provisions for granting divorces and the conditions justifying them under the laws of the several states are extremely various, though a divorce decreed by any of the states having competent jurisdiction is recognized as effective by the other states. The general complexity of divorce codes has led to a discussion favorable to uniform legislation in all the states. It is thought that the divorce laws of the District of Columbia are generally satisfactory to the various states, and the agitation has been largely favorable to modeling the divorce laws of the several states after them. A proposition to change the Constitution whereby Congress would be given power to pass uniform divorce laws has been considered at various times, but has been uniformly rejected as impracticable.

In Canada the divorces are less common than in the United States. In 1924, France reported one divorce to 21 marriages; Germany one to 24; Great Britain one to 96; and Canada, one to 161. This function of the government is vested in the courts or in the legislative bodies, and the number of divorces are uniformly larger where they are granted by the courts. In some instances the divorcees are not permitted to remarry. An *alimony* is an allowance made to the wife out of the estate or income of her husband, after she has been legally divorced or separated from him.

DIX, Dorothea Lynde, philanthropist and author, born in Worcester, Mass., in 1794; died in Trenton, N. J., July 19, 1887. After completing her education, she taught school in Boston until 1834, and visited Europe for the purpose of inspecting the methods of treating criminals and unfortunates. On returning to America she devoted her time to investigating the condition of lunatics, paupers, and prisoners in the several states east of the Rocky Mountains, and by persistent effort induced favorable legislation for the poor and unfortunate. Petitions to Congress were circulated in all parts of the country at her suggestion, asking that 10,000,000 acres of land be appropriated to found asylums for pauper lunatics. A bill to this effect passed Congress, but was vetoed by President Pierce. She was superintendent of hospital nurses at Washington during the Civil War. Among several works published by her are "Conversation about Common Things" and "Prison and Prison Discipline."

DIX, John Adams, soldier and statesman, born in Boscawen, N. H., July 24, 1798; died in New York City, April 21, 1879. He was educated in Montreal and Boston, entered the army in 1812, and was promoted captain in 1825. Soon after he resigned his commission, entering upon the study of law, and was admitted to the bar in 1828. In 1833 he was appointed secretary of state for New York. He was elected to the State Assembly in 1833 and in 1845 to the United States Senate as a Democrat. He became Assistant Treasurer of the United States in 1853, postmaster of New York in 1859, and Secretary of the Treasury in the Cabinet of President Buchanan in 1860. He entered the army at the beginning of the Civil War as brigadier general, and was appointed major general of volunteers. In 1864 he served in suppressing the riots in New York, and later became commander of the department of the East. He was appointed naval officer of the port of New York in 1866, but in the same year became minister to France, and was elected Governor of New York in 1872 as a Republican. His public career distinguished him as a decided friend of educational and commercial development, and as an honest public administrator. Among his literary productions are "A Winter in Madeira," "Speeches and Addresses," "A Summer in Spain and Florence," and two translations of the hymn "Dies Irae."

DIX, Morgan, clergyman, born in New York City, Nov. 1, 1827. He graduated at Columbia College and the General Theological Seminary, and in 1853 was ordained priest in the Protestant Episcopal church. In 1855 he became assistant minister of Trinity Church, New York, and was made rector of the parish in 1862. He was president of the house of clerical and lay deputies a number of years, but resigned in 1901 on account of advancing age. His writings are very numerous and have been widely read among church members and others. Among his books are "Gospel and Philosophy," "Lectures on the Authority of the Church," "Expositions of the Epistle of the Romans," "Good Friday Addresses," "Lectures on the Calling of a Christian Woman," "The Sacramental System," and "History of the Parish of Trinity Church, New York City." He died April 29, 1908.

DIXIE (dĭks'ȳ), the name of a popular song, which became a rival of *Yankee Doodle* in the Southern States during the Civil War. The name was first applied to a negro melody originated in New York, where a man named Dixie was a slaveholder. As the abolition sentiment grew stronger, he shipped his slaves south, and the refrain expressed their regrets on account of leaving Dixie's Land, as his plantation was called. Later the term was applied in a happy way to all the Southern States.

DIXON (dĭks''n), county seat of Lee County, Illinois, on the Rock River, about ninety miles west of Chicago. It is on the Illinois Central and the Chicago and Northwestern railroads. The noteworthy features include the high school, the county courthouse, the public library, and Lowell Park. The manufactures include condensed milk, musical instruments, furniture, lumber products, machinery, flour, and implements. It has systems of waterworks, sewerage, electric lighting, and street pavements. The surrounding country is a fertile farming district. It was settled in 1836 and incorporated in 1869. Population, 1900, 7,917; in 1920, 8,191.

DNIEPER (nē'pēr), an important river of Russia, next to the Volga and Danube the largest in Europe. Its source is in the government of Smolensk, at the foot of the Valdai Hills. It has a southerly course to Kiev, thence makes a bold curve toward the southeast, thence south, and thence southwest, flowing into the Black Sea. The total length is 1,325 miles, and it is navigable from a point some distance above the city of Smolensk. Among its principal tributaries are the Pripet, Beresina, and Desna. The government of Russia removed the rocks forming a cataract between Kiev and Alexandrovsk, and otherwise improved it for the enlargement of internal navigation. It also caused the building of numerous canals, among them one connecting the Dnieper with the Düna, thus making a continuous water route from the Baltic Sea to the Black Sea. The Dnieper is crossed by many bridges, has on its banks numerous commercial centers, and is itself of vast value in commerce. The lower course is noted for valuable fisheries. In the early history of Europe it was regarded the largest river in the world, except the Nile.

DNIESTER (nēs'tēr), a large river of Eastern Europe, rises in the Carpathian Mountains, in northeastern Austria. The main course through Russia is toward the southeast, passing from near Chotin toward Odessa, near which it flows into the Black Sea, after a course of about 850 miles. Owing to numerous rapids and shallows, it is navigable only for small vessels, though canals have greatly increased its service to commerce. It is subject to overflow from the effect of snow melting in the mountains in May and June. The principal cities on its banks include Bender, Mohilev, and Akerman.

DOANE (dōn), **George Washington,** bishop, born in Trenton, N. J., May 27, 1799; died April 27, 1859. After graduating at Union College in 1818, he studied law and later theology. In 1821 he was ordained deacon, selected as professor of rhetoric at Trinity College in 1824, and consecrated bishop of New York in 1832. He founded Saint Mary's Hall in Burlington in 1837, and established Burlington College in 1840. A year later he visited England and preached in various places. In 1824 he published "Songs by the Way." His miscellaneous writings and sermons were published by his son, William Croswell Doane (q. v.).

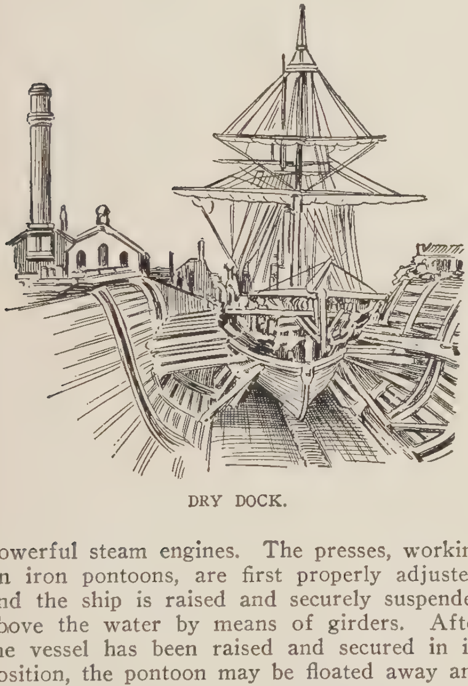
DOANE (dōn), **William Croswell,** clergyman, born in Boston, Mass., March 2, 1832; died May 17, 1913. He graduated at Burlington College and was ordained a priest of the Protestant Episcopal Church in 1856 by his father, G. W. Doane, who was bishop at Burlington. For some time he assisted his father in Saint Mary's Church, Burlington, and subsequently was rector of important churches in Connecticut and New York. He was consecrated bishop of Albany in 1869, and in 1902 became chancellor for the University of the State of New York. He founded Saint Agnes's School for Girls. His publications include "Epistles and Gospels for the Sundays of the Year," "Mosaics, or Harmony of the Collects," and "Rhymes from Time to Time."

DOBBS FERRY (dŏbz), a village of New York, in Westchester County, twenty miles north of the center of New York City. It is located on the Hudson River and on the New York Central and Hudson River Railroad, at the south end of an expansion in the Hudson known as Tappan Bay. Many New York business men reside here. It has a number of fine churches and many modern public utilities. Washington and Rochambeau met in the old Livingston mansion at Dobbs Ferry to plan the Yorktown campaign. Another conference was held at the same place in 1783, between Washington, Clinton, and Carleton, to consider the withdrawal of British troops from America. Population, 1900, 2,888; in 1920, 4,401.

DOBSON (dŏb'sŭn), **Henry Austin,** author, born in Plymouth, England, Jan. 18, 1840. After studying in England, he took a course of instruction in Germany with the view of adopting the profession of a civil engineer. However, his inclination was more largely toward literature, especially after becoming acquainted with German writers, and he became a frequent contributor of verse and prose to periodicals. His productions embrace many graceful and light forms of drawing-room verse, including adaptations from the French. Later he devoted himself more largely to prose, some of his writings in this line constituting popular works. Among his productions are "Proverbs in Porcelain," "At the Sign of the Lyre," "Old World Idyls," "Memoirs of Horace Walpole," "Eighteenth-Century Vignettes," and "Thomas Bewick and His Pupils." He wrote introductions to various biographies and historical works. He died Sept. 2, 1921.

DOCK, an artificial excavation or structure for receiving ships to be repaired, loaded, or unloaded. There are several classes, the most common being the wet docks, dry docks, and hydraulic docks. *Wet docks* are intended for loading and unloading vessels. They are made either by excavations near the shore, or by constructing walls of timber or solid masonry. The latter kind is used where tides cause material changes in the level of the water, the ship entering at the time of flood tide, and, when closed, the water is kept at the desired level. This class of docks provides protection for ships against storms and the action of tides.

Dry docks are used to admit vessels to be examined and repaired. They are of such construction that gates can be closed after the vessel enters, when the water is pumped out, leaving the vessel resting on timbers while the shipwrights are engaged on the repairs. A *floating dock* is a form of dry dock. It is sunk below the surface of the water, allowing the vessel to float into it, after which it is raised and the water is pumped out of the surrounding tank. *Hydraulic docks* are likewise a kind of dry docks. They ordinarily have a system of iron columns, each containing a hydraulic press, by means of which the vessel is raised above the surface of the water. The hydraulic presses are worked simultaneously by powerful steam engines. The presses, working on iron pontoons, are first properly adjusted, and the ship is raised and securely suspended above the water by means of girders. After the vessel has been raised and secured in its position, the pontoon may be floated away and used for elevating other vessels, thus furnishing means whereby a number of vessels may be inspected and repaired at the same time.



DRY DOCK.

Wet and dry docks are maintained in all important seaports. They are usually in charge of a dock master, the official who has control and general superintendence. *Dockyards* are inclosed magazines near harbors, in which all kinds of necessary stores and material are deposited. Among the principal dockyards of the United States are those of New York, Washington, Boston, Pensacola, Portsmouth, N. H., League Island, Pa., Mare Island, Cal., New London, Conn., and Portsmouth, Va. The dockyards of Canada include those of Montreal, Quebec, Saint John, and Vancouver. Glasgow has the most extensive dockyards in Europe.

DODDER (dŏd'dẽr), a genus of parasitic plants native to the temperate regions. They are leafless, climbing plants, and the flowers grow in dense clusters. The young plant begins its growth in the ground and twines upward, fastening itself to the plant from which it derives nutriment, and later the rootlets become severed from the soil. About fifty species have been classified, including those that are parasitic on hops, flax, clover, alfalfa, nettles, and leguminous plants. Some are very injurious to wheat and clover, especially in Europe. About twenty species occur in the United States.

DODDRIDGE (dŏd'rĭj), **Philip,** clergyman and author, born in London, England, June 26, 1702; died Oct. 26, 1751. He was educated at the theological academy of Kibworth, became pastor in 1722, and a few years later was chosen president of the academy from which he graduated. A large number of the Protestant ministers who dissented from the Church of England in the middle of the 18th century were educated at this academy. Doddridge sailed to Lisbon in 1751 to recuperate his health, where he died soon after. He was the principal officer of the academy for twenty years, and was noted for deep piety and an amiable disposition. His principal works include "The Rise and Progress of Religion in the Soul," "The Family Expositor," and a course of lectures in six volumes.

DODGE (dŏj), **Greenville Mellen,** soldier and civil engineer, born in Danvers, Mass., April 12, 1831. He studied at Norwich University, Vermont, in 1854, was engaged as railway surveyor by the government along the Platte River, and at the beginning of the Civil War joined the Federal army. In 1862 he commanded a brigade at Pea Ridge, and two years later was made major general of volunteers for valuable service at Sugar Valley and Resaca. He succeeded General Rosecrans in command of the department of Missouri, and subsequent to the war was chief engineer of the Union Pacific and the Texas Pacific railroads. He was Congressman from Iowa in 1867-69, and for many years was employed in building railroads. In 1898 he became president of the commission that was created to investigate the charges of mismanagement in the Spanish-American War. He died January 3, 1916.

DODGE, Mary Abigail, authoress, commonly known as "Gail Hamilton," born in Hamilton, Mass., in April, 1830; died Aug. 17, 1896. She was instructor of physical science in the Hartford, Conn., high school, and later became governess at Washington, D. C., in the family of Gamaliel Bailey, who was editor of the *National Era.* To that periodical she became a regular contributor, and later was one of the editors of *Our Young Folks.* She was closely related to the wife of James G. Blaine, assisting in writing the biography of the latter. Among her numerous writings are "Country Living and Country Thinking," "Twelve Miles from a Lemon," "English Kings in a Nutshell," "Skirmishes and Sketches," "Gala Days," "Woman's Worth and Worthlessness," "Insuppressible Book," and "The Battle of the Books."

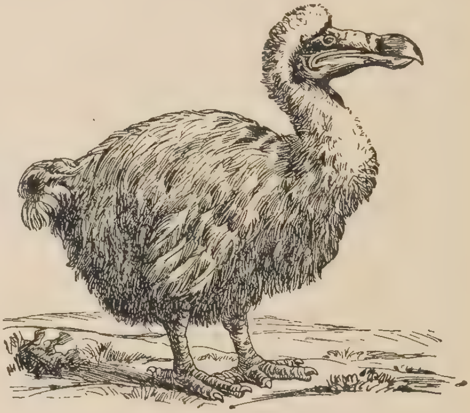
DODGE, Mary Elizabeth Mapes, authoress, born in New York City in 1838; died Aug. 21, 1905. She was left a widow in early life with two sons depending upon her for support. Soon after she engaged in literary work and became one of the editors of *Hearth and Home.* In 1873 she was given charge of *Saint Nicholas* and attained much success as its editor. A number of her productions have been translated into various languages and published in several European countries. Among her best known works are "Donald and Dorothy," "When Life Is Young," "Along the Way," "Rhymes and Jingles," "Land of Pluck," "Theophilus and Others," and "A Few Friends."

DODGE, William Earle, philanthropist, born in Hartford, Conn., Sept. 4, 1805; died in New York City, Feb. 9, 1883. He entered business in New York in 1826 as a manufacturer and importer, and attained much success in these enterprises. Later he became interested in benevolent and religious institutions, contributing large sums for the establishment of the Protestant College at Beyrout, Syria. In 1861 he was a member of the peace convention, and served as a Republican member of Congress in 1866-67. A statue was erected to his memory at Hartford two years after his death.

DODGSON (dŏj'sŭn), **Charles Lutwidge,** mathematician and author, born in England, in 1832; died Jan. 14, 1898. He graduated at Oxford in 1854, where he was a lecturer for twenty years, beginning in 1855, and in 1861 he was ordained as minister. His writings were largely for children, under the pseudonym of "Lewis Carroll." It is said that in his latter days he expressed the fear that his mathematical works would be obscured by his books of grotesque humor. Among his productions in mathematics are "Guide to the Mathematical Student," "Formulae of Plane Trigonometry," and "Syllabus of Plane Algebraical Geometry." His books for general reading include "Alice's Adventures in Wonderland," "Hunting of the Snark," "A Tangled Tale," and "Phantasmagoria and Other Poems."

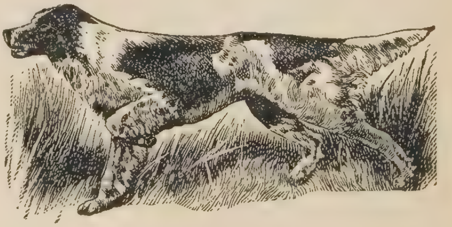
DODO (dō'dô), a large bird that became extinct about two centuries ago. It inhabited Mauritius, an island in the Indian Ocean, east of Madagascar. Writers class this bird with the pigeons, though it was an extreme modification of that type. It had strong but ill-shaped legs, functionless wings, and a clumsy aspect, and the upper mandible was hooked like that of a bird of prey. The plumage was hairlike. In size and weight it was larger than a swan. Its extinction was caused by its inability to fly and the excellent quality of its flesh for food.

DODONA (dô-dō'nȧ), an ancient city of Epirus, in Greece, about eleven miles southwest of the site of modern Janina. It was located near Mount Tomarus, surrounded by rugged hills, and was the seat of an ancient oracle dedicated to Zeus. The priestesses received their communications by listening to the rustling of the leaves of an oak tree, which was supposed to be the seat of the deity. In 1887 extensive excavations were made, when an acropolis and the temples of Zeus and Aphrodite were located.



DODO.

DOG (dŏg), the common name of a family of quadrupeds of the genus *Canis,* with which are included the wolf, jackal, and fox. However, the last mentioned is termed a subgenus by some writers. The origin of the dog family is not known, but the animal is thought to have resulted from a crossing of various extinct and living species of quadrupeds, as wolves and jackals. The question of descent has been debated for many years among writers and naturalists. Though wild dogs inhabit several parts of the world, such as the *dhole* of India and the *dingo* of Australia, they are regarded merely domestic species that have merged into the wild type by being isolated from settlements for long periods of time. The dog has been a domestic animal from times far remote. Among the earliest allusions to it are those found in the books of Moses and in the writings of



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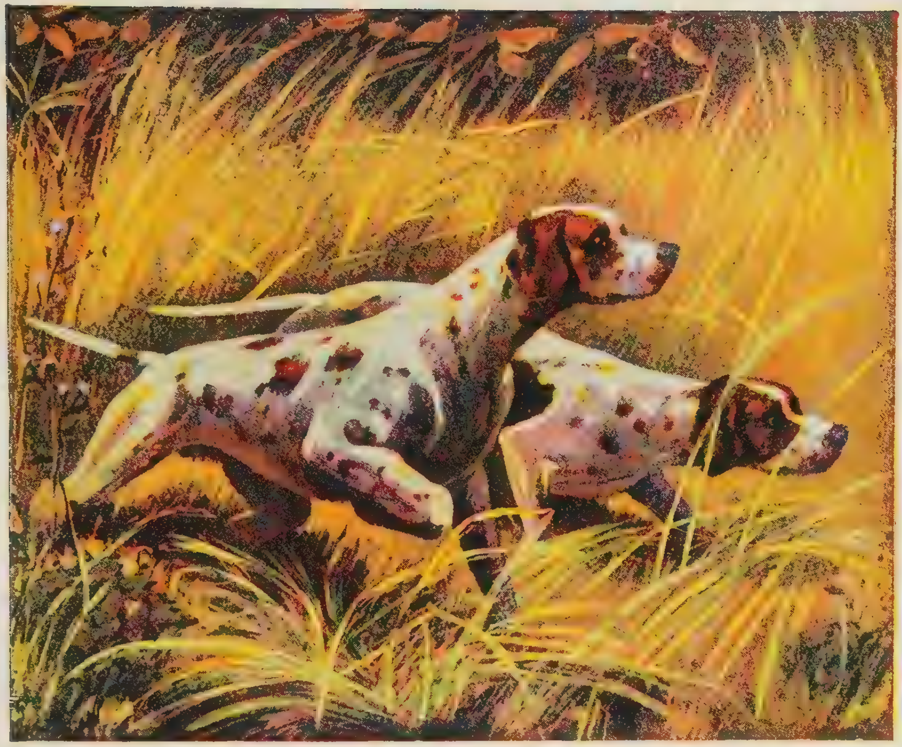
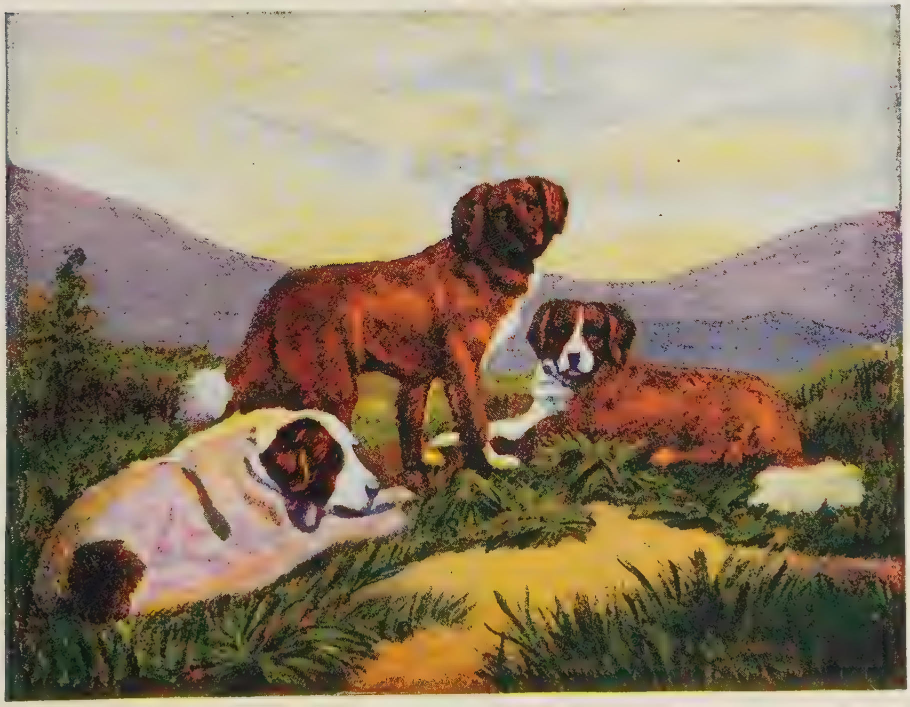




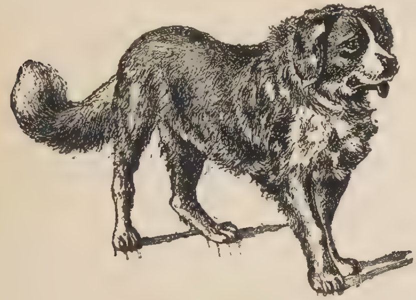
(Opp. 810)

BREEDS OF DOMESTIC DOGS.

Upper View—Pointers.
Lower View—Shepherd Dogs.

Homer. The figure of a mastiff is carved on an Assyrian monument, while an Arabian boarhound with its tightly curled tail is represented in Egyptian sculptures. From numerous Roman, Greek, and Celtic writings it is learned that dogs were sacrificed to certain deities. They were employed very early as executioners, and as living tombs for the consumption of carrion and human corpses.

In size and other respects dogs differ very largely, which fact has given rise to many species and different classifications. Some are not more than a few inches high, while others attain a height of from two to four feet, and are correspondingly proportioned in other respects. They represent all colors, have variously formed ears, heads, and limbs, and differ largely in the size and character of their hair. A species of dogs found in India has no hair at all. Some have smooth, others straight, others curly or shaggy, and some long, wavy hair. The difference in voice and habit is fully as great as in size and appearance, and consequently they serve many widely different purposes.



SAINT BERNARD.

Hamilton Smith arranged domestic dogs in six sections or groups as follows: 1. Wolf dogs, including such as the Saint Bernard, Newfoundland, Eskimo, Nootka, Siberian, and shepherd dogs. 2. Watch and cattle dogs, embracing the German boarhound, mâtin, dog of the North American Indian, and Danish dog. 3. Greyhounds, including the Irish hound, greyhound, brinjaree dog, lurcher, and Egyptian street dog. 4. Hounds, embracing the old southern hound, bloodhound, staghound, harrier, pointer, setter, spaniel, beagle, springer, cocker, poodle, and Blenheim dog. 5. Cur dog, including the terrier and their allies. 6. Mastiffs, embracing the different kinds of mastiffs, bulldog, and pug dog. In this classification he does not reckon the dingo, dhole, and several other species of wild dogs. These he does not include in the genus *Canis.* Besides, all the recognized species are not named under each division of this article. Other writers have made different classifications, but the one given here is among the most commonly accepted.

Cuvier regarded the dog as one of the most valuable domestic animals, owing to the useful purposes that it serves. It is true that each individual dog is devoted to his master, assuming largely his manners. It distinguishes and defends his property against intruders, often at the expense of life. The attachment formed remains until death, and springs rather from true friendship than from necessity. The highly developed sense of smell, strength, and swiftness has made the dog a powerful assistant of man in subduing other animals, and in serving many conveniences in society. The hunter is given valuable service by not only having the whereabouts of game located, but, after being slain, it is brought to him, even if the danger of flood and precipice have to be undergone.

As a watcher of property in all hours of the night and under all circumstances, the dog serves a useful purpose and designs to protect life and property against the encroachment of enemies and the elements. The labor of man has been greatly lightened in that the dog has been employed in the economy of life and in various industries. It is not only an aid in securing wild animals for food, but furnishes means of conveyance, as in the case of Eskimos and Siberians, and in the lighter service of going on errands and carrying parcels in cities.

As a source of relief in danger the ability of dogs is illustrated by many adventures in saving life at sea and in prolonged and terrific snowstorms and blizzards. The acuteness of scent in some species is so highly developed, particularly in the bloodhound, that they are able to follow in the track of a pedestrian at some distance. The story is told that Robert Bruce, in order to escape capture by being tracked by bloodhounds, walked in the water of a stream for some distance, lifted himself out by the branches of a tree, and from its trunk proceeded on his course of escape. Bloodhounds were employed in many regions of the slaveholding states for the purpose of finding the whereabouts of fugitives and making their capture possible.

Dogs are used in some of the European army corps for service as guards in outpost work and for carrying ammunition and dispatches. They are favorite animals for performance in animal shows, and happily entertain audiences with many skillful and intelligent actions. They render good results in police work in the larger cities, where homes for lost dogs are kept, in order that those going astray may be killed or returned to their owners. In most countries a dog is regarded personal property, and the owner may be indemnified for willful injury, but may be held liable for damage done to others by the animal. During the warm summer season dogs are required to be muzzled in most of the larger cities to prevent injury on account of madness.

Most dogs have a long tail, which is curled upward. The teeth are well developed and enable the animal to pursue its carnivorous habits, though a portion of the food of some species consists of tender vegetable matter. The young are born with eyes closed, attaining sight in from eight to twelve days. Full maturity is reached at about two years, and the average life is from ten to twelve years, though a period of twenty years is not rare. The hide is valuable in making wearing apparel, such as gloves, light shoes, and fur coats.

DOGBANE (dŏg′bān), a perennial plant native to North America, found in open barren places from Canada to Alabama. A large number of species have been classified, including both herbs and shrubs. The common dogbane grows to a height of two feet, has a smooth stem, ovate leaves, pink flowers, and milky juice. It is valued for its medical properties, obtained chiefly from the bark of the root. The Indian hemp, a species quite common in Canada, yields a flaxlike fiber used by the Indians in making utensils and small wearing apparel.

DOG DAYS, a period of about forty days set apart by the ancients as the hottest season of the year, which occurred at the time Sirius, the dog star, rose in conjunction with the sun, about July 1. Owing to the precession of the equinoxes, the time is now different, and is usually counted from July 3 to August 11, the time being twenty days prior to the heliacal rising and twenty days after. The ancients looked upon the period of heliacal rising as having an evil influence on the earth.

DOGFISH, a species of fish allied to the shark and noted for its voracious and destructive habits. They are common near the American coast, especially off Massachusetts, and in the oceanic waters of Europe. Their characteristics include more or less spotted skin, blackish-brown color, length from three to five feet, and rough skin in some species. In weight they vary from six to twenty-five pounds. Some species are valued as food, but they are caught mostly for their oil.

DOGGER BANK (dŏg′gẽr), a large sand bank near the middle of the North Sea, about midway between Denmark and England. It is about 50 miles wide and 175 miles long, extending in a northeast and southwest direction. Near the coast of England it is about 50 feet below the surface of the water and the general depth is less than 120 feet. Important cod-fishing grounds extend across the Dogger Bank.

DOGMA (dŏg′mȧ), a word used originally to indicate an opinion, but now applied generally to an article of belief derived from authority. In the latter sense it is applied to the essential doctrine of Christianity, based upon the Scriptures or the writings of the Fathers of the Church. The English-speaking people prefer to use the term *doctrine,* but in many countries of Europe dogma is preferred. A separate professorship in the study of science of dogmas (Ger. *Dogmen*) is maintained in many of the universities of Germany.

DOG STAR. See **Sirius.**

DOG VIOLET, or **Dog's Tooth Violet.** See **Violet.**

DOGWOOD. See **Cornel.**

DOLE (dōl), **Nathan Haskell,** editor and author, born in Chelsea, Mass., Aug. 31, 1852. After studying in his native town, he attended Harvard University, where he graduated in 1874, and taught schools in Massachusetts. Subsequently he engaged as a writer and journalist, and was for some time connected with newspapers published in Philadelphia and other cities. He translated from Tolstoy and Daudet, and edited "The Rubaiyat of Omar Khayyam." Original works from his pen are "Life of Francis William Bird," "The Hawthorne Tree, and Other Poems," and "Omar, the Tent-Maker."

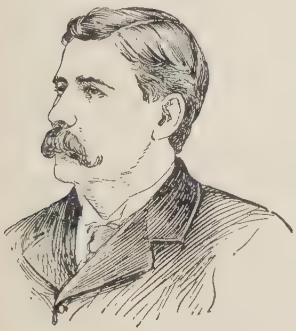
DOLE, Sanford Ballard, jurist, born in Honolulu, Hawaii, in 1844, his father being an American missionary in that island at the time of his birth. He was educated in Honolulu and the United States, admitted to the bar of Massachusetts, and became judge of the supreme court of Hawaii in 1887. When the provisional government was founded in 1893, he was appointed the president of Hawaii, and when the Hawaiian Islands became a republic on July 4, 1894, he was chosen its first president. He visited the United States in 1898, presumably on a mission to bring about annexation, and was warmly welcomed. After Hawaii was annexed by Congress, President McKinley appointed him on July 8, 1898, as a member of the committee to recommend to Congress suitable legislation for Hawaii. In 1903 he was made United States district judge. He died June 9, 1926.

DOLL, a toy usually representing a little girl, but sometimes a boy or man. Dolls are made largely in Europe of jointed wood, and elsewhere of stuffed cloth, wool, and India rubber. Their heads and hands are usually of porcelain or wax. The custom is thought to be more ancient than civilization, having been found largely among savage peoples. With the invention and perfection of phonography came the talking dolls. These dolls laugh, whistle, sing, and talk, and are almost as common as the wax dolls so long favorites with children. Dolls were displaced to some extent in the United States in 1908 by a toy figure representing a small bear, called the *Teddy Bear,* so named from President Roosevelt. This toy is inclosed in fur or a furlike cloth.

DOLLAR (dŏl′lẽr), a monetary unit of value, equal to one hundred cents in the United States and Canada. It is coined of silver and gold, though the latter is rarely used. The dollar is the smallest denomination of paper money now in circulation, and the largest issued in silver. The same name is given to coins in Mexico, the Philippine Islands, and in many countries of South America. Some writers assume that the name was abbreviated from Joachimsthaler, a coin circulated in 1518, in Bohemia, but some German writers derive the term from talent, the name applied to a pound of gold in the Middle Ages. The Dutch name is *daler,* and the German, *thaler.* The sign $, generally used at present to signify a dollar, is supposed to date from the celebrated Pillar dollar of Spain.

DOLLART (dŏl′lĕrt), a gulf on the northwestern coast of Germany, at the mouth of the Ems River, on the boundary of the Netherlands. It is about seven miles wide and twelve miles long, and was formed by inundations of the North Sea. The land began to be worn away in the latter part of the 13th century and the inundations continued until about 1540. Many villages were destroyed within this period, but some of the land has since been reclaimed as polder by the construction of dikes.

DÖLLINGER (dĕl′lĭng-ĕr), **Johann Joseph Ignaz**, theologian, born in Bamberg, Germany, Feb. 28, 1799; died at Munich, Jan. 10, 1890. He was the son of Ignaz Döllinger (1770-1841), a celebrated physiologist of Germany. After obtaining a liberal education, he received priestly orders in the Roman Catholic church in 1826, and became professor of church history in the University of Munich. He entered the Bavarian Parliament in 1845, where he was a leader of the party favoring the separation of the church and state. He advocated the abandonment of temporal power by the Papacy in 1861, and opposed the action of the ecumenical council in 1870, which decreed the infallibility of the Pope. The following year he was excommunicated by the archbishop, but remained popular, and was elected rector of the University of Munich. He founded the movement known as the "Old Catholic" and presided over its congress. Among his numerous publications of a historical character are "The Religion of Mohammed," "Treatise on the History of the Church," "The Doctrine of the Eucharist During the First Three Centuries," "Papal Legends of the Middle Ages," "Sketch of Luther," and "History on the Sects of the Middle Ages."



JONATHAN P. DOLLIVER.

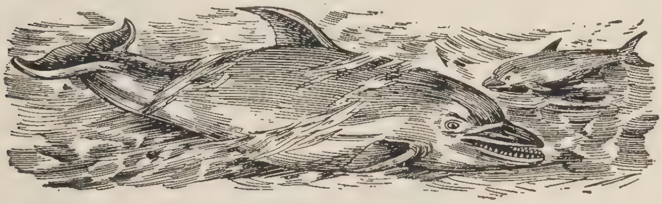
DOLLIVER (dŏl′lĭ-vĕr), **Jonathan Prentiss**, statesman, born in Kingswood, W. Va., Feb. 6, 1858. After attending the district schools, he took a preparatory course and entered the West Virginia University, from which he graduated in 1875. He was admitted to the bar in 1878, and in the same year removed to Iowa, settling in the city of Fort Dodge. Here he built up a successful law practice, took an active interest in politics, and was elected to Congress as a Republican in 1888, serving consecutively until 1900, when he entered the United States Senate as the successor of John H. Gear. He was reëlected in 1902 and in 1907. Dolliver ranks among the most eminent orators and debaters of the present time, and is in demand as a lecturer and political speaker. He was mentioned as a prominent candidate for Vice President in 1900 and 1908. He died Oct. 15, 1910.

DOLLY VARDEN TROUT, a large fish found in the cold rivers of the Pacific Coast. It has a large head and mouth and a stout body, and the sides are marked with round red spots. The tail is almost truncate and the adipose fin is large. It is found in the northwestern part of North America, from the northern part of California northward to Kamchatka. In Oregon it is called bull trout and toward the Russian border it is known as malma or golet.

DOLOMITE (dŏl′ō-mīt), or **Magnesium Limestone,** a mineral composed of carbonate of lime and carbonate of magnesia, found widely distributed in all parts of the world. The colors are various, including reddish-white, brown, and yellowish-white. Pearl spar, so called from its luster, is a crystallized variety. Reddish dolomite contains manganese and cobalt, and brown spar owes its coloring to the presence of iron. Dolomite rock is employed extensively for building purposes. It is one of the materials that was used largely in the construction of the houses of Parliament in London. Large quarries are worked in Vermont, Tennessee, Georgia, and in the southeastern part of Canada.

DOLPHIN (dŏl′fĭn), a genus of fish belonging to the same family as the porpoises and narwhals. They are distributed widely from the Equator to the poles and commonly swim in companies of large numbers, their habits being largely gregarious. Their movement is skillful and with much velocity, often swimming beside the fastest vessels. They display their agility by many graceful movements, leaping into the air and then plunging through the water with a playful and rapid motion. Tourists are often delighted by their gambols as they come to the surface or may be traced by a slender wake of foam beneath the surface.

The snout is sharp and long, and there are numerous teeth in both jaws, but no organ of smell, dolphins being the only mammals having this distinction. The flesh is coarse and rank, although it is used as food by savages. Their food consists chiefly of mollusks, fish, and other water animals. A blowhole of a semilunar form is located nearly over the eyes, and they come to the surface at short intervals to breathe. The length varies from six to ten feet. The young are watched with care and anxiety by the females, who suckle them for some time after birth. A species known as the *bottle-nosed dolphin* is most common on the eastern coast of North America, extending southward from New Brunswick. Other familiar species are the *black dolphin* and the *spotted dolphin.* A fish of the mackerel family, celebrated by poets on account of changing its color when dying, has been given the same name, though it is not a true dolphin. This species of fish is called *Dorado* by the Portuguese. It is native to tropical waters, attaining a length of from three to five feet.



DOLPHIN.

DOME, the name given to a vaulted covering of the whole or a part of a building. It is applied more properly to the external part of a spherical roof, while the term *cupola* is used to designate both the external and interior parts. Most domes or cupolas have a circular form, though some are elliptical or polygonal, this depending on the figure of the base. A lantern or small dome is usually built at the top of a large dome, and is supported by the framework of the latter. In former times domes were constructed largely in the form of hemispheres of stone masonry, while those of modern construction are largely of timbers covered with a metallic surface protection. However, the newer domes have a framework almost entirely of iron or steel. The Rotunda or Pantheon at Rome, constructed under Augustus, is the largest masonry dome in the world, having an internal diameter of 142 feet and an internal height of 143 feet. It is still in a perfect condition. Other noteworthy domes are those of the Cathedral of Florence, Saint Peter's at Rome, Saint Sophia at Constantinople, and Saint Paul's at London. The finest dome in America is that of the capitol building at Washington. It is constructed of cast iron, has a diameter of 96 feet and a height of 180 feet, and is 288 feet above the base line of the east front. The weight of the iron in the dome and tholus is 8,009,200 pounds.

DOMENICHINO (dō̇-mĕn-ē̇-kē'nō̇), or **Domenico Zampieri,** eminent painter of the Lombard school, born in Bologna, Italy, in 1581; died April 15, 1641. He was the son of a shoemaker, who assigned him to study under Dionysius Calvart, and later he completed his training under Annibale Caracci. After devoting some time to painting in his native city, he proceeded to Rome, where he attained a high reputation, becoming painter to Pope Gregory XV., by whom he was employed as principal architect to complete the papal palace. He was a sufferer on account of the jealousy of rivals, who sought to do him injury mainly because of his remarkable ability in giving correctness, delicacy, and expressive force to his work. After leaving Rome, he opened a school at Naples, and there formed the so-called cabal of Naples. It is thought that his death was caused by poison administered at the instance of rivals. Among his best works are "History of Apollo," "Triumph of David," "Communion of Saint Jerome," and "Martyrdom of Saint Agnes."

DOMESDAY BOOK (do͞omz'dā), the name by which an old record of the lands of England is known. It contains an account of the statistical survey made in 1085-86 under William the Conqueror. There are two volumes written on vellum, a folio of 382 pages and a quarto of 450 pages. These books contain the names of the chief landowners, the value and extent of the estates, the kind and value of different personal property, and the name of the tenants. The record was made by a number of commissioners, who canvassed the country, being assisted in the work by the people of different sections. It furnished a basis for the organization of military forces and gave an account of the wealth and population, as well as titles to property. It was printed in facsimile in 1783 and 1816, and since 1861 has been converted to metallic plates. The Domesday Book furnishes a valuable record for the investigation and study of many questions relating to the early history of Great Britain.

DOMINIC (dŏm'ĭ-nĭk), **Saint,** founder of the Dominican order of monks, born at Calahorra, Old Castile, in 1170; died in Bologna, Italy, Aug. 4, 1221. His early life is surrounded with legends, in which he is described as a child who practiced self-denial and gave evidence of future devotion. He is said to have been brought up by an uncle, who was a devoted churchman and taught him the first lessons in divine and sacred things. At the age of fifteen he entered the university at Palencia, where he studied ten years. The story is told that he sold his clothes to feed the poor in the time of famine. He accompanied the Bishop of Osma in 1203 to negotiate the marriage of Alfonso VIII. of Castile with a Danish princess, and there came in contact with a life different from what he had been accustomed to see.

Saint Dominic found that the Danish literature and thought were devoted to the love of chivalry and much time was spent by the Danes in gaieties. About the same time he came in contact with the Albigenses of southern France, with whom the legates of the Pope had labored in vain to secure their conversion, and he promptly began the work they had given up.

Later he joined the crusading army sent by the Pope into the country, and in this capacity effected a notable revolution in the spread of Christianity. After conducting an extended crusade against the Albigenses, he repaired to Rome and devoted the remainder of his life to the order of Dominicans, which received the sanction of the Pope in 1216, and in the course of five years spread throughout most of the European countries.

DOMINICA (dŏm-ĭ-nē'kȧ), or **Dominique,** the largest island of the Leeward group, comprising a part of the British possessions in the West Indies. It is located between Martinique on the south and Guadeloupe on the north, and has an area of 291 square miles. The surface is mountainous, including some of the highest peaks in the Lesser Antilles. Morne Diablotin, the most elevated summit, has an altitude of 5,900 feet. Many of the valleys are fertile and well watered. Few indentations characterize the shore, hence the island has few good harbors. Among the principal products are indigo, coffee, cotton, sugar, and fruits, all of which are exported. Roseau, the capital, has a good trade and is well fortified. Columbus discovered Dominica on Nov. 3, 1493. In 1814 it became an English possession. Population, 1922, 29,695.

DOMINICAL LETTER (dō̇-mĭn'ĭ-cạl), one of the first seven letters of the alphabet, that is A, B, C, D, E, F, G, used in calendars to mark the Sundays throughout the year. The marking begins with the first seven days of the year, and all the succeeding days of the year are marked consecutively in sets of seven days; hence the 1st, 8th, 15th, etc., of the year are marked by A; and the 2nd, 9th, 16th, etc., by B, and so on. The dominical letter would be the same year after year, if the number seven divided the number of days without a remainder but since this is not the case, the dominical letters go backward one day every common year and two every leap year. Hence, the series repeat themselves in four times seven, or 28 years. The dominical letters are used to discover on what day of the week any day of the month falls in a given year.

DOMINICAN REPUBLIC. See **Santo Domingo.**

DOMINICANS (dō̇-mĭn'ĭ-kans), the name of an order of friar preachers founded by Saint Dominic at Toulouse in 1215. Owing to a black cloak formerly worn by them, they were called Black Friars in England, and in France they were known as Jacobins, from the first establishment of the order in the church of Saint Jacques in Paris. The rules of the order are based on those of Saint Augustine. They are bound to observe silence and abstinence from fresh meat, and their vows include observance of poverty, chastity, and obedience. The special aims of their institutes are the study of sacred sciences and ministerial duties. The order was confirmed by a bull of Pope Innocent III. in 1216. In the Middle Ages they divided the paramount influence in the church with the Franciscans, and in the 16th century the Jesuits took possession of the intellectual supremacy exercised by them. They gave to the church four popes and about seventy cardinals.

DOMINOES (dŏm'ĭ-nōz), a game played by two or more persons, with flat, rectangular pieces of wood, bone, or ivory. The pieces are about half as broad as they are long, 28 in number, and usually are plain black on the back and white on the front, but the latter face is divided by a line across the center, on each side of which are black dots, except that the ends of one set from 1 to 6 are left blank, so that upon each domino there is a different combination of numbers. Each player takes an equal number of the dominoes, selecting them after they have been mixed with their backs up. The person who has drawn the one which has the highest number of points puts it down. The next domino played must be one with a number the same as one of the two numbers represented by the first, and the two similar ends are joined. The third player may match the remaining number of either the first or second domino, and thus the game continues until one of the players has put down all his pieces and can neither draw nor match. The winner scores the number of points equaled by the dots on the pieces held by his opponent. This game depends partly on chance and partly on the memory and calculation.

DOMITIAN (dō̇-mĭsh'ĭ-ạn), **Titus Flavius Domitianus,** third Flavian Emperor of Rome, born in Rome Oct. 24, 51 A. D.; slain Sept. 18, 96. He was the son of Vespasian and the younger brother of Titus, succeeding the latter on the throne in 81. He was given control of Italy while his father was in the East, but on account of mismanagement was excluded from public affairs on the return of his father. When his brother Titus became emperor, he was still excluded from public life, but on the death of the former was declared emperor by the soldiers. His administration witnessed the enactment of good laws and internal improvements, but his personal military campaigns against the Germans were unsuccessful. He was defeated by the Dacians, caused the killing of Agricola in Britain on account of jealousy, and, when his soldiers on the Upper Rhine revolted in 93, he became suspicious of all his associates. A conspiracy was formed, largely on account of his intolerable conduct, and he was slain by the dagger of an assassin.

DON, a large river of European Russia, having its source in Ivan Lake, a small sheet of water in the government of Tula. It has a southerly course to the Sea of Azov, which it enters after flowing about 1,150 miles. The Don is navigable for large vessels during the spring floods, and at other times is fit only for small craft. Owing to numerous shallows, the water is spread in some places to a width of 1,750 feet. It is connected by a canal with the Volga system of navigation, and as a whole carries a large interior traffic. The principal tributaries are the Khoper, Donetz, Manitch, and Sal. Productive fisheries abound in the larger portion of its course.

DONALDSON (dŏn'ald-sŭn), **James**, educator and author, born in Aberdeen, Scotland, April 26, 1831; died March 9, 1915. He studied at Aberdeen, London and Berlin, and in 1852 became Greek tutor in Edinburgh University. In 1854 he was made rector of the high school in Stirling and subsequently held a similar position in Edinburgh. He became principal of the University of Saint Andrews in 1890, where he served a term of years with eminent success. His publications are "Modern Greek Grammar for the Use of Classical Students," "Critical History of Christian Literature and Doctrine from the Death of the Apostles to the Nicene Council," and "Expiatory and Substitutory Sacrifices of the Greeks."

DONALDSONVILLE, a town of Louisiana, capital of Ascension Parish, on the Mississippi River 64 miles above New Orleans. It is on the Texas and Pacific Railroad and is in a sugar, rice, and cotton growing country. The industries include cotton mills, sugar works, tobacco factories, and machine shops. It has municipal waterworks and an electric light plant. The place was settled in 1760 and incorporated in 1806. Population, 1920, 3,745.

DONATELLO (dŏn-â-tĕl'lô), or **Donato,** famous sculptor, born in Florence, Italy, in 1386; died Dec. 13, 1466. He belonged to the Donati family, among whose members were several scholars, and a number became doges of the republic of Venice. At an early age he became interested in art work and was instructed by Lorenzo Bicci. He was noted as a persistent worker, producing many excellent statues and a number of bas-reliefs. Among his sculptures are statues of Saint Mark, Saint Peter, Saint Michael, Saint George, and David. His larger works include "The Crucifixion," "The Baptism," and "Herod Receiving the Head of John the Baptist." An excellent equestrian statue was executed by him for one of the public squares of Padua.

DONATI (dô-nä'tê), **Giovanni Battista,** astronomer, born in Pisa, Italy, Dec. 16, 1826; died in Florence, Sept. 20, 1873. He was long connected with the Royal Institute at Florence and became the discoverer of Donati's comet in June, 1858. It is the most brilliant comet, next to the one of 1811, discovered in the last century. On Oct. 10, 1858, it was nearest the earth. See **Comet.**

DONELSON, Fort, an important fortification of the Confederates, on the Cumberland River, in the northwestern part of Tennessee. Grant moved his forces to the Cumberland and attacked Fort Donelson, after he had captured Fort Henry on the Tennessee, Feb. 6, 1862. The Confederates at first drove the Federal gunboats off, but General Grant's prompt action made it necessary for the fort to surrender. In a memorable letter General Grant demanded the surrender to be unconditional. About 15,000 Confederates were made prisoners and the fall of Nashville and Columbus became inevitable. General Wheeler made an attempt to recapture the place from the Federals on Feb. 6, 1863, with a force of 4,500 of Bragg's army. The garrison of the fort was held by 600 Federals, and by successful skirmishes the attack was delayed until a gunboat came up the river, causing the Confederates to withdraw.

DONGOLA (dŏn'gô-lȧ), a province of the Egyptian Sudan, in the eastern part of Nubia, on both sides of the Nile. The surface is level and fertile. Wheat, dates, and cattle are the leading exports. The inhabitants consist chiefly of a mixture of Nubians and Arabs. Mohammedanism is the chief religion. The province was settled by Mamelukes in 1812, after they had been expelled from Egypt, but in 1821 it was retaken by the Egyptians under Ibrahim Pasha. In 1886 a force of British and Egyptians under Kitchener quieted a rebellion, and since then the country has been enjoying an era of peace. Dongola, or El-Ordeh, the capital, is situated on the west bank of the Nile.

DONIPHAN, Alexander William, soldier, born in Mason County, Kentucky, July 9, 1808; died Aug. 8, 1887. He graduated at Augusta College, Kentucky, in 1826, was admitted to the bar, and began a successful practice at Lexington, Mo. In 1846 he entered the United States service against Mexico and was with Gen. Kearny in the expedition to Sante Fé, as colonel of the first regiment of Missouri mounted volunteers. The following year he marched against Chihuahua, where he was met by a superior force of Mexicans, but compelled that city to surrender. He was three times elected to the Missouri Legislature, in 1836, in 1840, and in 1854, and was a member of the peace convention in Washington, which convened to avert the Civil War.

DONIZETTI (dô-nê-dzĕt'tê), **Gaetano,** noted Italian composer, born in Bergamo, Italy, Sept. 25, 1797; died there April 8, 1848. He learned the elements of music in the lyceum of his native town, and studied advanced music under several masters. At the age of twenty years he entered the army. While garrisoned at Venice, he produced several excellent operas, and after his discharge from the military service he devoted himself to opera writing. His reputation was made by several productions that were received with much applause at Naples and Paris. Among other distinctions, he received appointments at the courts of Vienna and Naples, but persistent work affected his mind. Among his masterpieces are "The Martyrs," "Daughter of the Regiment," "La Favorita," and "Linda di Chamounix."

DON JUAN (dŏn jū′ạn), a personage of mythical origin, first alluded to in the legends and writings of Spain, but later currently mentioned in most European countries. It is represented that he descended from a historic family resident at Seville in the time of Peter the Cruel. The life he led was one of cruelty, dissipation, and lawlessness. In an attempt to abduct Giralda, the daughter of the governor of Seville, he was intercepted by her father, but subsequently slew him in a duel. Some time after the interment of the slain man, he visited his burial place and challenged his statue to follow him to a feast, which was promptly accepted. On appearing at the feast and meeting the guests, the animated statue carried Don Juan to the lower regions. In some dramas the plot is laid for his rescue, which finally succeeds, and he is induced to end his life with the severest penance in a monastery. The various stories form the groundwork of many popular dramas, novels, and poems, both in Spanish-speaking countries and in many others. Mozart's "Don Giovanni" is the most celebrated work based on Don Juan.

DONKEY (dŏn̲′kў̆). See **Ass.**

DONNELLY (dŏn′nĕl-lĭ), **Ignatius**, author and statesman, born in Philadelphia, Pa., Nov. 3, 1831; died in Minneapolis, Minn., Jan. 1, 1901. After securing an education in the schools of Pennsylvania he removed to Minnesota in 1857, and was elected Lieutenant Governor in 1859 as a Republican. He served as a member of Congress from 1863 to 1869. Shortly after retiring from Congress he devoted himself largely to writing his "Atlantis, the Antediluvian World," which appeared in 1882. Later he published "Ragnarok" and "The Great Cryptogram." In the latter he attempted to prove that the Shakespearean plays were written by Francis Bacon. In 1900 he was the candidate for President on the ticket of the People's party.

DON QUIXOTE (dŏn kwĭks′ŏ̍t). See **Cervantes.**

DORA D'ISTRIA (dō′rȧ dēs′trē̍-ȧ), the pseudonym of Helen Ghike, Princess Koltzoff Massalsky, a celebrated writer of Rumania, born in Bucharest, Jan. 22, 1828; died Nov. 22, 1888. After receiving an education in her native city, she devoted herself to the study of modern and ancient languages and literature. The "Iliad" was translated by her into German when she was only fifteen years old. After traveling extensively through Europe, she married the Russian prince Koltzoff Massalsky. Her numerous magazine articles and literary productions attracted much attention in a number of countries. She was honored by admission to several scientific and learned societies, and was adopted as a Grecian citizen by the legislature of Greece in 1867. Among her most famous works are "Heroes of Rumania," "On Women by a Woman," "Monastic Life in the Oriental Church," and "Women in the Orient."

DORCHESTER (dôr′chĕs-tẽr), a city of New Brunswick, capital of Westmoreland County, at the junction of the Memramcook and Petitcodiac rivers. It is nicely situated on Shepody Bay and the Intercolonial Railway, 115 miles northeast of Saint John, and is important as a port of entry. Coal and building stone are obtained in the vicinity. It has shipbuilding yards and is the seat of the penitentiary of the Maritime Provinces. Among the prominent buildings are several fine schools and churches, and it has electric lights and other public utilities. Population, 1920, 7,801.

DORDRECHT (dôr′drĕkt), or **Dort,** a city of the Netherlands, in the province of South Holland, ten miles southeast of Rotterdam. It is located on an island in the Meuse River, and has extensive transportation facilities by canals and railways. A large Gothic church, a public library, a theater, and several fine schools are among the chief buildings. The industries include flouring mills, shipyards, sugar refineries, tobacco factories, and iron and salt works. Dietrich III. of Holland founded the city in 1018, and its commercial importance is due largely to its membership in the Hanseatic League. It was the seat of the Synod of Dort in 1618, by which the doctrines of Calvin were affirmed. Population, 1923, 46,295.

DORÉ (dō̍-rā̍′), **Paul Gustave,** eminent designer and painter, born in Strassburg, Germany, Jan. 10, 1833; died in Paris, Jan. 27, 1883. His education was secured under leading masters of the arts in Paris, and he displayed more than ordinary skill as a student. At first he contributed various sketches to magazines and periodicals, but later began book illustrations. His reputation was spread to many countries by his characteristic illustrations of "Rabelais" in 1854 and of Sue's "Wandering Jew" two years later. In 1861 he received the decoration of chevalier of the Legion of Honor and was made an officer in 1879. Doré galleries were opened in London, Vienna, and several other cities for the exhibition of his productions. The works produced by him give evidence of remarkable talent as a poet and artist. Among the most celebrated and best known illustrations are those of Milton's "Paradise Lost," "Don Quixote," "Dante's "Inferno," Poe's "Raven," "Fables of La Fontaine," "Travelers in the Pyrenees," and "Bible Illustrations." His "Christ Leaving the Praetorium" is considered his most important painting.

DOREMUS, Sarah Platt, philanthropist, born in New York City, Aug. 3, 1802; died Jan. 29, 1877. She married Thomas C. Doremus in 1821, a wealthy merchant, by whose help she was enabled to give charitable assistance to many worthy projects. Among the many enterprises receiving assistance from her are the mission for French-Canadian peasants, the House and School of Industry for Poor Women in New York, and the Nursery and Child's Hospital. During the Civil War her attention was directed to the enterprise of giving aid to the sick and wounded of both the North and South. After the war she founded the Presbyterian Home for Aged Women, extended aid during the famine in Ireland in 1869, and founded several associations, including the Female Bible Society. Besides adopting several youths, she reared a family of nine children of her own.

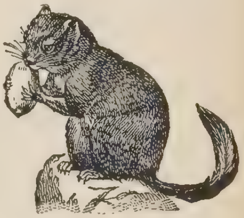
DORIA (dô′rê-ä), a celebrated family of Genoa, having its beginning in the 12th century, and of which Andrea Doria was the most distinguished. He was born at Oneglia, Italy, Nov. 30, 1466, and adopted a military career. He entered the service of Francis I. of France at about the age of fifty years, and was given command of a fleet in the Mediterranean. In his military life he exemplified a spirit of independence, causing Francis to become irritated to such an extent that he ordered his arrest. However, Doria promptly entered the service of Charles V. of Germany, with whom he stipulated for the freedom of Genoa. In 1529 he was tendered the title of sovereign of Genoa, but instead aided in forming a constitution, which remained in force until 1815. His love of liberty and support of independent government caused him to be called "Father of Peace." He won decisive victories over the Turks at Coron and Patras in 1532, and later Tunis was conquered for Charles V. mainly on account of his decisive action. In 1539 he aided in a joint expedition against the Turks, and two years later in another against Algeria. He died highly respected in 1560.

DORIANS (dō′rĭ-ạnz), one of the two principal branches of the Greeks, the other being the Ionians. According to legend, they descended from Dorus, a son of Hellen, and made settlement in the Peloponnesus. Among the cities of importance founded by them were Argos, Sparta, and Messenia. Their colonies included Sicily, Crete, and settlements in Asia Minor. The dialect of the Dorians was harsh and rough, while the Ionian was mild and polished, yet some admirable features of the former caused it to enter largely into hymns and choruses. Their philosophy and character are visible in the Pythagorean school, which shows a strong attachment to the aristocracy. The Dorian architecture is distinguished by strong and unadorned pillars, while the Ionian pillars are slender and profusely decorated. See **Column.**

DORIC ORDER (dŏr′ĭk), the earliest and strongest of three Grecian orders of architecture. It is noted for its proportions being the same as that of a man; that is, the height of a man is about six times the length of his foot. In the Doric style the columns are six times the diameter. The simplicity and harmony in this order are remarkable, and render many of the excellent temples, such as those built to Mars, Minerva, and Hercules, celebrated on account of their long, unbroken lines. Simplicity marks the Doric capital, while the frieze and cornice are massive, but plain. See **Column.**

DORION (dô-rê-ôn′), **Sir Antoine Aimé,** statesman, born at Sainte Ann de la Perade, Quebec, Jan. 17, 1818; died May 31, 1891. He was educated at Nicolet College and in 1842 was admitted to the bar. In 1854 he was elected a representative in the Canadian Assembly for Montreal, serving until 1857, when he was chosen a member of the Dominion Parliament for Hochelaga. From 1872 until 1874 he represented Napierville. He was a member of the French-Canadian Liberal party, called the *Rouge,* and held many important positions in the ministry. Queen Victoria knighted him in 1877.

DORMANT (dôr′mạnt). See **Hibernation.**


DORMOUSE.

DORMOUSE (dôr′mous), a rodent animal appearing to be intermediate between the squirrels and the mice. These animals inhabit all temperate and warm countries, but are most common in Eurasia and Africa, where twelve species are found. The fur is soft, the eyes and ears are large, the tail is long and hairy, and the fore limbs are short. In habits they are quite timid and in size are larger than a common mouse. The winter is spent largely in a dormant state, from which they have been named *dormice.* Their food consists of nuts, vegetables, and grains. They are easily domesticated and seem to enjoy moving about in a cage. During the warmer days of summer they are active in fields and woods laying up a store for winter, but in the rainy or cold seasons they lie curled up in their nests and sleep. The young, from three to four in number, are brought forth in the spring, and by winter are quite able to take care of themselves.

DORR (dôr), **Thomas Wilson,** statesman, born in Providence, R. I., Nov. 5, 1805; died Dec. 27, 1854. He was admitted to the bar and practiced at Providence. Though elected as a Whig to the State Assembly, he soon became allied with the Democrats. The State was governed under an old charter granted by Charles II. in 1663, under which the right of suffrage was limited to persons owning $134 worth of real estate and the eldest son of such owners. After fruitless efforts in the Assembly, Dorr organized a party in 1841 by which he hoped to reform the laws of the State. Accordingly, a State convention was held at Providence on October 4. It submitted a proposed constitution to the people, which received a majority vote of the adult male citizens, but the authorities decided that it was adopted illegally. In the meantime the Legislature called a convention to frame and submit a proposed constitution for approval by the voters, but it was rejected by a majority vote in 1842. Each party called a general election, one electing T. W. Dorr Governor and the other Samuel W. King. Both governors claimed proper authority, but the election of King was generally approved. Dorr resisted, was arrested, and sentenced to imprisonment for life. In 1847 liberty was granted to him under a general amnesty, and he was restored to his civil rights in 1851. The disturbance raised in the State is generally known as the Dorr Rebellion, and the parties conducting it were called suffragists. While the methods of Dorr were revolutionary, they were the means of securing a more equitable government in the State.

DORSEY (dôr′sĭ), **James Owen,** ethnologist, born in Baltimore, Md., Oct. 31, 1848; died 1895. He studied at the Theological Seminary of Virginia, was ordained as deacon, and was sent to the Dakotas as a missionary. He was recognized in an honorable way by many scientific associations, and was granted a gold medal by the Royal Italian Didactic Society. Among his publications are "Omaha Sociology," "Osage War Customs," "Indian Personal Names," "Siouan Phonology," and "Siouan Migrations."

DORTMUND (dôrt′mo͞ont), a city in the province of Westphalia, Germany, on the Ems River, about 48 miles northeast of Cologne. Its rapid growth the past several years is due to the development of large coal mines in the vicinity and the building of numerous railroads. Several thousand persons are engaged in mining, while as many more are employed in manufactures and railroad enterprises. Among the products are machinery, tobacco, porcelain, textiles, woolens, cigars, clothing, iron and steel utensils, and railroad cars. It has an interesting city hall, a large public library, and municipal baths and gymnasiums. The central railway station is an excellent building, and the churches and institutions of learning likewise include expensive and valuable structures. The city has well-paved streets, a large park, and many modern facilites, including electric lights, sewerage, and rapid transit. It was a member of the Hanseatic league and still has a large trade. Population, 1905, 175,577; in 1920, 214,333.

DOTHAN, county seat of Houston County, Alabama, on the Central of Georgia and other railroads. It is in a productive section and has a large trade in merchandise and extensive railroad industries. The chief buildings include the high school, courthouse, and Y. M. C. A. buildings. It was settled in 1890 and has been growing rapidly. Population, 1920, 10,034.

DOUAY (do͞o′ā), or **Douai,** the name by which the version of the Bible used by English-speaking Catholics is known. The translation was made by divines connected with the College of Douay, France, under the direction of Cardinal Allen, the founder of that institution. It is based on the Vulgate and is authoritative among Catholics, having received the sanction of the Pope and the approval of the Council of Trent. The Old Testament was published in 1609, about two years before the authorized edition of King James's Protestant Bible appeared. The New Testament now published with the Douay version of the Old Testament was first issued at Rheims in 1582. Both have been revised at different times.

DOUBLEDAY, Abner, general, born at Ballston Spa, N. Y., June 26, 1819; died Jan. 26, 1893. He graduated at West Point in 1842, served in the Mexican War, and was made captain in the war against the Seminoles. In 1861 he commanded the garrison at Fort Sumter, and on April 12 fired the first gun in defense of the fortification. He was promoted brigadier general in 1862 and assigned to the defense of Washington. Later he commanded on the Rappahannock, at Bull Run, Chancellorsville, Fredericksburg, and Gettysburg. In 1864 he commanded the southeastern forces, and the following year was promoted major general in the regular army, remaining in active service until 1873. Among a number of interesting books relating to the war he published "Gettysburg Made Plain," "Reminiscences of Forts Sumter and Moultrie," and "Chancellorsville and Gettysburg."

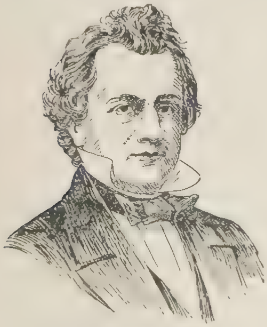
DOUBLE STARS, or **Binary Stars,** a pair of stars that revolve about each other, or both about a common center. Sir William Herschel discovered the first of these stars in 1803, and since a large number have been added to the catalogues, though the periods of revolution have been determined of only a few. About 10,000 apparently double stars have been catalogued, and it is reasonably certain that 250 are binary; that is, they have a revolution round their common center of gravity. It requires from five and one-half years up to perhaps a thousand to complete their periods of revolution, hence it is difficult to study them with any degree of precision. The double stars reveal a duplication of the spectral lines, hence they afford curious instances of contrasted colors. The color of the smaller star complements that of the larger one, the former being blue or green and the latter red or orange.

DOUGLAS, a city of Cochise County, Arizona, on the El Paso and South Western and other railroads. The surrounding country produces copper and cement. It has machine shops, cement works, and stock yards. The chief buildings include the high school and the city hall. Population, 1920, 9,916.

DOUGLAS (dŭg′lȧs), a city of Great Britain, capital of the Isle of Man, on the east shore of the island, eighty miles northwest of Liverpool. It has several slaughterhouses and a large trade in merchandise. An extensive breakwater and a lighthouse afford safety for steamships, with which regular communication is maintained with Belfast, Dublin, Liverpool, and Glasgow. Population, 1922, 23,530.

DOUGLAS, the name of an ancient and celebrated family of Scotland. The first member of the family mentioned in history is William of Douglas, who is generally assigned to the period between 1175 and 1213. "The Good Sir James," who fought at Bannockburn with Bruce, was a descendant from him. He not only served the cause of Scotland, but after the death of Bruce faithfully complied with his request in carrying the heart of that eminent Scot to the Holy Land. Among the descendants are William Douglas, Earl of Liddesdale, and Sir William Douglas, who ranked among the celebrated warriors and contestants for the Scottish throne. Prior to 1357 the Douglases had no higher title than knight, but in that year Sir William Douglas was made Earl of Douglas and by marriage became Earl of Mar. In 1371 he claimed succession to the Scottish crown in opposition to Robert II., the first of the Stuarts. His son James, who was recognized as second Earl of Douglas and Mar, was slain in the Battle of Otterburn in 1388, and the earldom of Douglas was bestowed on Archibald, Lord of Galloway, surnamed the Grim. The title succeeded from generation to generation to various personages bearing the name of Douglas until in 1646, when it passed to the third son of the first Marquis of Douglas, who was created Earl of Selkirk. At the present time the earls of Selkirk are the only representatives of the family, all others being now dormant or extinct.

DOUGLAS, Stephen Arnold, statesman, born in Brandon, Vt., April 23, 1813; died June 3, 1861. He was the son of a physician, who died when Stephen was two years old. He was educated among the hardships common to the early life of many great Americans, but attended the academy in Canandaigua, N. Y., three years. After working on a farm, he taught school, and at the age of twenty-one began the practice of law in Jacksonville, Ill. His success was assured from the first by reason of eminent ability and close application to his profession, and in 1835 he was elected attorney-general of the State. He became secretary of the State of Illinois in 1840 and judge of the State supreme court in 1841, and was elected to Congress as a Democrat in 1843, serving in that capacity until 1847, when he was elected to the Senate, serving until 1861.



STEPHEN A. DOUGLAS.

Douglas, owing to his unusual aptitude, was commonly called the "Little Giant," and ranked as one of the most influential leaders of his party. In Congress he actively favored the acquisition of the whole of Oregon, and was chairman of the Committee on Territories. He supported the compromise of 1850, promulgated the doctrine of popular sovereignty, and supported the famous Kansas-Nebraska bill. While opposed to slavery, he held that the right to restrict it to any part of the country was not vested in Congress. Accordingly, he became a strong opponent to the Wilmot Proviso, which provided for the prohibition of slavery in any Territory that might be acquired by the peace treaty with Mexico. As to slavery in the territories, he held that the settlers should decide for themselves, from which the expression *squatter sovereignty* originated.

The name of Douglas was presented as a candidate for President in the Democratic conventions of 1852 and 1856. In 1860 he received the nomination for President by the northern division of the Democrats, the southern nominating John C. Breckenridge. Though receiving much popular support from the people, only twelve electoral votes were recorded in his favor. He sympathized with the cause of the Union, supporting it by several addresses on the subject, but he did not live to witness the successful termination of the contest.

DOUGLAS, William Lewis, capitalist and public man, born in Plymouth, Mass., Aug. 22, 1845. He attended the public schools and began work in the shoe shop of his uncle at an early age. Later he was employed in the cotton mills at Plymouth, and in 1876 opened a small shoe shop at Brockton, Mass. From this humble beginning he was able to build up one of the largest shoe factories in the world, with a capacity of about 20,000 pairs of shoes per day, and in addition established about 75 retail shoe stores in large cities. In 1883 he was elected a member of the Massachusetts House of Representatives, was reëlected several times, and became mayor of Brockton in 1891. He was chosen Governor of Massachusetts as a Democrat in 1904, but declined to be a candidate for a second term. He was a delegate to many national conventions. He died Sept. 17, 1924.

DOUGLASS, Davis Bates, noted engineer, born in Pompton, N. J., March 21, 1790; died Oct. 19, 1849. He graduated at Yale in 1813, became a member of the government corps of engineers, and was given charge of the sappers and miners at West Point. He took part in the battles of Niagara and Lundy's Lane, effected the repair of Fort Erie, and was promoted captain. After resigning from the service in 1831, he was appointed chief engineer of the Morris Canal Company, New Jersey, in which he introduced the use of inclined planes instead of locks. Later he was identified with the construction of the Croton aqueduct, engineered the Greenwood Cemetery, Brooklyn, and designed the supporting wall for Brooklyn Heights. Among other important positions, he held chairs at West Point; in the University of New York; Hobart College, New York; and Kenyon College, Ohio.

DOUGLASS, Frederick, orator and statesman, born in Tuckahoe, Md., in February, 1817; died in Washington, D. C., Feb. 20, 1895. His mother was a negro slave and his father a white man. Though kept as a slave on the farm of Edward Lloyd until ten years old, he was sent to live as a waiter with a relative of his master in Baltimore, where he learned to read and write. A Boston shipbuilder purchased him in 1832, for whom he became a waiter and later a ship calker. He escaped from slavery in 1838 and settled at New Bedford, Mass., and began to develop ability as a speaker and writer. The American Anti-Slavery Society engaged him as a lecturer, in which capacity he attracted considerable attention and was greeted by large audiences. He visited England in 1845, where he was well received and shown much courtesy. His friends in England collected $750, with which his legal emancipation was purchased from his former master. He established two weekly newspapers at Rochester, N. Y. In 1870 he published the *New National Era* in Washington, and a year later was appointed secretary of the commission to Santo Domingo. The Republicans named him as a presidential elector from New York in 1872, and in 1877-81 he served as United States marshal in the District of Columbia. In 1884 he married a white woman. President Harrison appointed him minister to Hayti in 1889, and the Haytian government made him a commissioner to the Columbian Exposition. Among his writings relating to slavery are "My Bondage and My Freedom" and "Narrative of My Experience in Slavery."

DOUM PALM (dōōm). See **Palms.**

DOURO (dō'rōō), a large river of the Spanish peninsula, rises in the northern part of Spain, and flows west through a portion of Spain and the whole of Portugal. The entire course is 500 miles and the most important tributary is the Pisuerga. Owing to rocks and sand banks, only about seventy miles are navigable. The mouth of the river is three miles below Oporto, where it flows into the Atlantic Ocean.

DOVE (dŭv), a pigeon, especially the familiar species known as the *mourning dove* of North America and the *turtle dove* of Europe. Among the domestic doves are the tumblers, fantails, and carrier pigeons. In poetry the dove is regarded a symbol of gentleness, while in Christianity it typifies the Holy Spirit. See **Pigeon.**

DOVER (dō'vẽr), the capital of Delaware, county seat of Kent County, about eight miles west of Delaware Bay, on the Pennsylvania Railway, Delaware Division. It is located on elevated ground and has well-improved streets. In the State capitol, which is the largest building in the city, is a library of 35,000 volumes. Other noteworthy features include the county courthouse, the post office, the high school, and the Wilmington Conference Academy. It has a number of monuments dedicated to prominent men of the Revolution. The manufactures consist of flour, canned fruits, glass, clothing, baskets, and machinery. The surrounding country is largely devoted to fruit growing. Electric car lines furnish ample means of conveyance. It was made the State capital in 1777 and was incorporated in 1829. Population, 1900, 3,329; in 1920, 4,042.

DOVER, county seat of Strafford County, New Hampshire, on the Cocheco River, ten miles northwest of Portsmouth. It is on the Boston and Maine Railroad. The streets are broad and well paved. Among the chief buildings are the courthouse, the public library, the town hall, the opera house, the Joseph's Hill School, and the Franklin Academy. The manufactures include boots and shoes, cotton and woolen goods, machinery, earthenware, and prints. It has waterworks, sewerage, and electric street railways. Dover is one of the oldest cities in the State, dating from about the middle of the 17th century. It was incorporated in 1855. Population, 1900, 13,207; in 1920, 13,029.

DOVER, a town of New Jersey, in Morris County, 27 miles northwest of New York City. It is located on the Rockaway River, the Morris Canal, and the New Jersey Central and the Delaware, Lackawanna and Western railways. The manufacturing enterprises include iron works, machine shops, knitting and silk mills, and stove and range works. It has a fine system of waterworks and a number of good schools. Several summer resorts and a national powder depot are near the town. The first settlement was made in its vicinity in the middle of the 18th century. It was incorporated as a town in 1869. Population, 1920, 9,817.

DOVER, an important seaport of England, on the Strait of Dover, about sixty miles southeast of London. It is the nearest to France of the English seaports, being only twenty-one miles from the French coast. Numerous railroad lines join it with the interior cities, while electric railways furnish ample urban and suburban connections. Among the noteworthy buildings are the churches of Saint James and Saint Mary, the Dover College, the public library, and the town hall. The Castle of Dover, located on the chalk cliffs east of the city, was founded by the Romans. It has extensive systems of waterworks, sewerage, and stone and macadam pavements. The manufactures include fabrics, soap, machinery, clothing, and food products. Its harbor has been put in excellent condition by recent improvements, while the Admiralty Pier protects the entrance. The city and surrounding districts are rich in relics of ancient times. Pop., 1921, 46,972.

DOVER, Ohio. See **Canal Dover.**

DOVER, Strait of, the sea channel which separates England from France, and connects the English Channel with the North Sea. The length is 24 miles. It is 25 fathoms deep at the time of the spring tides. The narrowest point is at Dover, where it is 21 miles wide. Chalk cliffs are more or less prevalent on both sides, and indicate that at remote ages Great Britain was connected with the mainland. The strait is the site of an important commercial life.

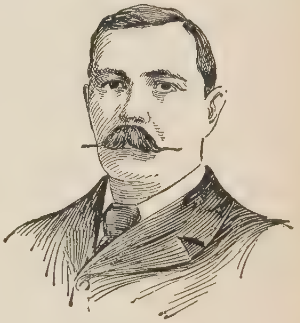
DOW, or Dou, Gerard, famous painter, born at Leyden, Holland, in 1613; died there in 1675. He received his early instruction from Dolando, a draughtsman, and subsequently studied under Rembrandt. His works excel in delicacy and harmony of coloring and are considered gems of art. About 200 paintings extant are attributed to him. Some of them have been sold at very high prices and are in the leading collections of Europe. Among the most noted are "The Village Grocer," "The Dentist," "The Interior of a Household," "The Charlatan," "The Fiddler," and "The Dropsical Woman."

DOW, Neal, temperance reformer, born in Portland, Me., March 20, 1804 died in the same city Oct. 2, 1897. After being educated at Friend's Academy, New Bedford, Mass., he located in his native town, where he was elected mayor in 1851 and was reëlected five years later. Through his efforts the Maine prohibitive liquor law was passed in 1851. He served as a member of the State Legislature in 1858-59 and accompanied General Butler to New Orleans as colonel of the thirteenth Maine volunteers, rendering efficient service in the Civil War. He was taken prisoner in 1863 and was exchanged the following year, after which he resigned. Dow is best known by his able and persistent work as a temperance lecturer and reformer. In 1880 the Prohibition party nominated him for President of the United States, for which office he received 10,305 of the popular vote.

DOWDEN (dou'dẹn), **Edward,** scholar and critic, born in Cork, Ireland, May 3, 1843. He studied at Trinity College, Dublin, and became professor of oratory in the same institution, but was soon transferred to that of English literature. In 1900 he was made secretary of the council of Trinity College. The Cunningham gold medal of the Royal Irish Academy was awarded to him. His writings are very numerous, including a history of French literature and critical works on Shelley and Wordsworth. Among his books are "Studies in Literature," "Romeo and Juliet," "The Shakespeare Primer," "The Passion Pilgrim," and "Southey's Correspondence with Caroline Bowles." He died April 4, 1913.

DOWIE, John Alexander. See **Christian Catholic Church.**

DOWNING (doun'ing), **Andrew Jackson,** landscape gardener, born in Newburgh, N. Y., Oct. 31, 1815; died July 28, 1852. His interest in landscape gardening was early developed by aiding his brother in the establishment of a nursery. He erected a beautiful country residence in 1838, and was considered authority on beautifying and modeling residences. In 1850 he visited Europe to study gardening, and the following year was appointed commissioner to lay out the public grounds in Washington, D. C. When sailing from his home to conduct the work, the steamer took fire on the Hudson river, and his personal efforts in endeavoring to save others resulted in his drowning. Downing was for some years editor of the *Horticulturist,* and published works entitled "Landscape Gardening," "Cottage Residences," and "Fruit and Fruit Trees of America."


ARTHUR CONAN DOYLE.

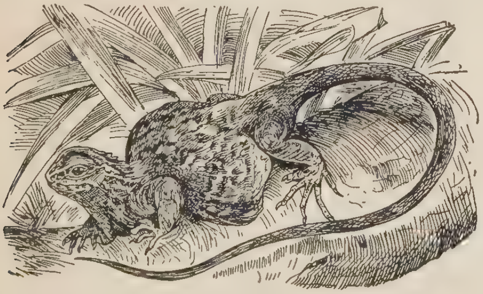
DOYLE (doil), **Arthur Conan** author, born in Edinburgh, Scotland, May 22, 1859. He studied at Stony Hurst College and in Germany, and took a medical course of instruction after returning to Edinburgh. Before graduating, he made a trip to the Arctic regions, where he spent four months as surgeon of a whaling crew. He practiced medicine at Southsea for eight years, devoting his leisure to literary work. Many of his productions have been translated into various languages. He is known in America by his writings and by a number of lectures delivered while making an extensive tour through the United States and Canada. During the Boer War he visited South Africa and in the meantime wrote a defense of the British policy in that region. For this service to the government he was knighted in 1902. Among his best known productions are "A Study in Scarlet," "The Firm of Girdlestone," "Reminiscences," "Round the Red Lamp," "Rodney Stone," "The Great Boer War," "The Adventures of Sherlock Holmes," "The Stark Munro Letters," "The Green Flag," and "The Return of Sherlock Holmes."

DRACHMA (drăk'mȧ), or **Drachm,** the name of a silver coin and of a measure of weight in ancient Greece. The measure of weight was composed of six *oboli,* or a handful. A *mina* contained 100 drachmas and a *talent* contained 1,000. As a unit of weight it varied somewhat at different times, from 6 to 6.5 grams. The *silver drachma* had a value of from 15.20 to 17.05 cents. The drachma is the name of a silver coin now used in Greece. It has the same value as the franc of France. The dram, a unit of the apothecaries' weight, contains three scruples, or sixty grains.

DRACO (drā'kō), a lawgiver of Greece, one of the most eminent of Athens, who was appointed in 621 B. C. to prepare a code of laws. It is probable that he merely codified the laws then existing in a disordered state. His code of laws provided the penalty of death for most offenses, on account of which their enforcement was neglected on many occasions. It is said the great lawgiver died from stifling while at Aegina as the result of having a cloak thrown about him by the populace as a mark of respect. His laws were changed considerably by Solon, though the death penalty for murder was retained. The work of Draco was important, since it largely limited the power of the archons, who were then in control of the government, and gave the state an eminence.

DRAFTING, or **Conscription,** the system or method of enlisting men for military service under compulsion. In modern times drafting men for the army has been resorted to only in cases of emergency, especially when the country was involved in a formidable military contest. The modern system is based upon the military constitution of ancient Rome, where conscription was resorted to each year as a means to recruit the army. In most countries of Europe military service is obligatory on every man of sound mind and normal physical development. The United States enacted a compulsory service law at the time of the Civil War, when President Lincoln recruited the Federal armies by levying drafts of men. In July, 1863, when the Union was in need of more soldiers, such a conscription act caused a riot in New York, known as the Draft Riots. Both Canada and the United States resorted to draft laws in 1917. In the latter country this law applied to all males between the ages of 21 and 45 years and under it 23,456,021 men were registered.

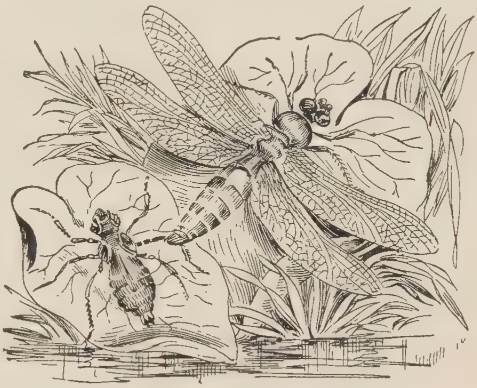
DRAGON (drăg'ŭn), the name applied to several species of lizards found in South America, Asia, and Africa. The flying lizard is the best type of the genus. It is about ten inches in length, has a long tail, and is entirely harmless. On each side the skin is expanded in the form of a parachute, enabling it to make long leaps in passing from branch to branch, though it cannot fly in the ordinary sense. Most species live in trees and feed almost entirely on insects, which they catch with much skill.



FLYING DRAGON.

The name *dragon* applied in mythology to an animal or serpent of abnormal form. This fabulous animal is represented as serving various purposes, among them watching the garden of the Hesperides, and whose destruction was included with the seven labors of Hercules. In various paintings the dragon has the form of a winged crocodile, and is said to have dwelt in caves among cliffs and mountains. The fossils of the pterodactyl found in the rocks of the Mesozoic time show some resemblance to the flying dragon of mythology.

DRAGON FLY, the popular name of a large number of insects which are widely distributed, including not less than 2,000 species, of which about 300 occur in North America. They have a large, broad head loosely attached to the thorax. Their eyes are prominent, often meeting upon the crown of the head. The horny mandibles are toothed, the wings are closely articulated, and in many species the hind wings are about the same size as the anterior. They are remarkable for their voracity and feed on insects, which they catch with much skill. They deposit their eggs on plants growing beneath the surface of water, where the larvae and pupae lead an aquatic life. Their larval state occupies a year, after which the skin bursts along the back and the developed insect makes its appearance. Many species are from two to three inches long, of numerous colors, and not dangerous in any way. The common dragon fly of North America is known as the *devil's darning-needle.* About 75 species of fossil dragon flies have been described, appearing in the Lias and more recent formations.



DRAGON FLY.

DRAGON TREE, a tree native to the Canary Islands. The stem is usually short in proportion to its thickness, and the short branches terminate in tufts of sword-shaped leaves. A celebrated specimen on the island of Teneriffe, near Orotava, was visited by Humboldt in 1799 and had a stem over forty feet in circumference. It yields a resinous substance known as *dragon's blood,* but this product is also obtained from a number of other trees, including several species native to the East Indies and North and South America. This product is a colorless and tasteless substance, and is used in the preparation of varnishes and lacquers.

DRAINING (drān′ing), a term applied extensively in agriculture to the process of drawing off superfluous water by artificial means. Through the agency of draining, large tracts of otherwise wet and waste lands have been rendered susceptible to cultivation and the production of plants and cereals. The common way in extensive flats is to excavate a great open channel or ditch, through which the water passes off freely after rains or the melting of snow or ice. Lands used for cultivation are usually drained by the construction of tile drains. The common draintile is manufactured of clay, is circular in form, commonly twelve inches long, and has an inside diameter measuring from three to fifteen inches. The larger sizes, which range from eighteen to forty inches in diameter, are generally made two feet long, either of clay or concrete. In order to construct a proper tile drain it is necessary to make a careful survey of the district to be drained, forming an estimate of the approximate amount of water to be carried from the region, and locate the tile so a proper fall will insure the unobstructed passage of the water. A complete system of drainage requires a number of minor drains or laterals, which carry the water to the main drain. The number of such laterals depends upon the character of the surface and the nature of the soil, since a hard clay soil is not so easily penetrated by the moisture as the loose and sandy formations.

In the colder countries the tile drain should be sufficiently deep to be below the frost in the winter, else water freezing within will burst the tile and impair the drain. The best drains are at least four feet deep at the shallowest places, which necessitates placing them at great depths through moles or hills. It has been found that the system of draining lands, though quite expensive in some cases, is a profitable investment, owing to the fact that the lands redeemed are usually the richest and most fruitful. Tile factories are operated in practically all of the states where drainage is necessary and the proper clays are found. By the use of this method the amount of arable land has been increased largely. There are other forms of drainage, such as open ditches made by plows, layers of stones covered by earth, and perforated drainpipe of circular sections covered by stones and earth, but the most common is the one employing tiles made of clay or concrete.

DRAINAGE CANAL. See **Chicago Drainage Canal.**

DRAKE, Friedrich Johann Henrich, sculptor, born at Pyrmont, Germany, June 23, 1805; died April 6, 1882. He was the son of a turner and served in the shop of his father as an apprentice, but at an early age began to show an inclination to study art. In 1827 he began to study sculpturing under Rauch and later studied under Thorwaldsen in Italy. Among his early works is a group entitled "The Dying Warrior," completed in 1833, and his "Madonna and Child," made about the same time, was purchased by the Empress of Russia. The marble statue of Frederick William III., in the Berlin Thier Garten, is one of his best productions. In 1867 he completed the colossal bronze statue of King William of Prussia, which was adjudged the greatest product of modern sculpture at the Paris Exposition, in recognition of which he received the great gold medal of the Legion of Honor. He executed many busts and statuettes, including those of Bismarck, Rauch, Schiller, Goethe, and Von Moltke. Many academies and institutions of learning admitted him to membership, including those located at Rome, Munich, Paris, Antwerp, and Saint Petersburg.

DRAKE, Joseph Rodman, poet, born in New York City Aug. 7, 1795; died Sept. 21, 1820. His parents died while he was a boy, and his early livelihood depended upon his own resources. He engaged in business for some time and later studied medicine. In 1812 he became associated with Fitz-Greene Halleck and was a friend of James Fenimore Cooper. His longest poem is "The Culprit Fay," written when he was 22 years old, and his best known poem, "The American Flag," the four concluding lines of which were written by Halleck. He was for some time a writer for the New York *Evening Post* and contributed many witty poems to that periodical. His death at an early age was caused by consumption of the lungs.

DRAKE, Sir Francis, famous navigator, born in Devonshire, England, about 1540; died in the West Indies, Jan. 28, 1596. He was the son of a yeoman and was apprenticed to a neighbor, who had a vessel with which he made voyages to France and Zealand. When his master died, he fell heir to the ship and conducted a successful trade. He learned of the success of Sir John Hawkins in America, and, selling his ship, he joined that voyager at Plymouth and accompanied him on an expedition to Mexico. He obtained a commission from Queen Elizabeth in 1570, cruised on the coast of the West Indies, and enriched himself by plundering Spanish settlements. Soon after he crossed the Isthmus of Panama, where he beheld the Pacific Ocean for the first time. He returned to Plymouth in 1573 with great wealth and attracted the attention of the anxious and interested people.

In 1577 Drake sailed with five vessels to South America and plundered many of the Spanish settlements. Subsequently he entered the Pacific Ocean and cruised on the coast of Chile and Peru, and, sailing northward, he claimed California for the British. After spending some time in the vicinity of San Francisco Bay, he sailed across the Pacific to the Moluccas, crossed the Indian Ocean, and doubled the Cape of Good Hope. On reaching Plymouth in 1579, he was received with distinction, while the queen came to his vessel to partake of a banquet and confer upon him the honor of knighthood. Subsequently Drake spent two years preparing a fleet of twenty-one vessels with which to sail against Philip II. of Spain in South America and the West Indies. His voyage proved profitable. Later he visited the newly planted colony of Virginia. It is said that he brought both the potato and the tobacco plant with him to England on his return home.

When the great Spanish Armada was building to invade England, Drake was commissioned by Elizabeth to sail with a fleet of thirty vessels and destroy the enemy's ships. He entered the port of Cadiz in April, 1587, where he destroyed one hundred vessels and took possession of much booty. The following year he was made vice admiral under Lord Howard, and with a fleet broke the naval supremacy of Spain, scattering the Armada. His next expedition was directed against the Spaniards in Portugal, where they had taken possession, but the enterprise was not particularly successful. On returning to Plymouth, he was elected a member of Parliament. His last voyage was made in 1595, when he joined Sir John Hawkins in an expedition to the West Indies for the purpose of destroying the Spanish settlements. Hawkins died before reaching Porto Rico and Drake was repulsed in attacking the place. A disease shortly after broke out among the soldiers and sailors, of which he himself died, and his body was lowered in the sea near Puerto Bello.

DRAKENSBERG (drä′kẹns-bẽrg), an elevated range of mountains in South Africa, extending through the eastern part of Cape Colony and along the borders of Natal and the Orange River Colony. Champagne Castle, one of the highest peaks, has an elevation of about 11,500 feet. Several railroads cross through its passes. During the Anglo-Boer War it was the scene of many battles.

DRAKE UNIVERSITY, a coeducational institution at Des Moines, Iowa, the largest independent endowed institution of higher learning in Iowa. It was organized in 1881. The chief benefactor, Gen. Francis Marion Drake, made a gift of $20,000 to establish it. Afterward he made other donations at different times, the total amount of his gifts aggregating nearly $250,000. As a mark of appreciation of his beneficence the institution was named Drake University. Another leading spirit in the founding of the university was George Thomas Carpenter, the first president, who was made chancellor and held that office until his decease, in 1894. Barton O. Aylesworth succeeded him as president, but resigned in 1897, when William Bayard Craig was chosen chancellor. He was succeeded in 1903 by Hill McClelland Bell, under whose presidency the institution made phenomenal growth in resources and attendance; Daniel W. Moorehouse became president in 1922.

The chief buildings include the Main Building, the Auditorium, Science Hall, the University Church, Howard Hall, the Field House, Cole Hall, Memorial Hall, and the Carnegie Library. Six colleges have been established in the university, the College of Liberal Arts, College of the Bible, College of Law, College of Commerce, College of Education, and College of Music. In the College of Liberal Arts, the work is largely elective, leading to the three degrees of A. B., Ph. B., and B. S. The library has a capacity of 150,000 books, a hall of history, and a number of rooms for officers and for recitations. Drake University, in 1922, had 110 instructors and 1,675 students.

DRAMA (drä′mȧ), a literary production which embodies a picture of real life and is to be represented on a stage by action. There are two principal classes of dramas, tragedy and comedy, with a number of minor kinds, such as the farce, burlesque, tragic comedy, and melodrama. A *tragedy* is a production intended to interest the mind in the highest degree, while a *comedy* is designed merely for amusement and merriment. The others are mixtures of the two chief classes, and alternately seek to interest, instruct, and amuse. Dramatic performances of some kind are found among all peoples, and their origin is to be attributed to the love of imitating the actions of others or of some deified personage. The Old Testament contains a number of compositions that partake of a dramatic nature, among them numerous dialogues in the Book of Job and the lyric poems in the Song of Solomon.

The dramatic literature in ancient India and China was particularly characteristic, each country possessing a drama peculiar to itself. The Greeks originated the European drama in both the tragic and comic forms. It is thought that the first comedy was given by Susarion and Dolon in Athens on a movable scaffold in 562 B. C. The first production in tragedy was from the pen of Thespis in 536 B. C. Aeschylus introduced dresses on the stage, by which means the imitation of action was rendered much more natural. The three greatest writers of tragedy in Greece are Aeschylus, Sophocles, and Euripides, while Aristophanes is the most eminent writer of comedy. In Rome the early drama was derived from the Greeks, though it never attained to so high a degree of perfection, even under Terence and Plautus, the most celebrated of Roman writers of comedy, and Andronicus, the writer of tragedy. The only dramas of ancient Rome extant are a few specimens coming to us from Seneca.

The drama of modern European countries took rise in the moralities, miracle plays, and masterpieces of the Middle Ages, though the Italian drama began with the reproduction of classical models. Performances at banquets became common in most countries in the 12th century, and later scenes from the Bible were acted on stages in churches by priests and their assistants. The morality plays were fables, in which impressive moral lessons were recited with the view of overcoming vice and its baneful influences. Among the celebrated Bible plays is the famous Passion Play, illustrating the life of Christ, which is still counted among the most interesting and popular of the sacred dramas. In the 18th century the Italian drama took a new form of interest, both in comedy and tragedy, the later writers including Monti, Goldoni, Alfieri, and Manzoni. The other nations developed a taste for dramatic art much later than Italy. Spain followed Italy, reaching its acme in dramatic art through the works of Calderon and Lope de Vega, while the English reached their climax in Shakespeare.

The first period in the history of English drama begins with the reign of Elizabeth and terminates with that of Charles I. Within this time Shakespeare, Ben Jonson, Beaumont, Greene, Marlowe, and Fletcher were among the brilliant dramatists The second period began with Charles II., including among its best writers Otway, Lee, Wycherley, Congreve, and Dryden. At first the plays of the latter period were marked by inferior productions, but later notable changes were made for the better. The most noted of English writers of more recent time include Coleridge, Shelley, Byron, Lord Lytton, Browning, and Tennyson. However, Shakespeare stands preëminent among the English dramatists and his plays are still more popular than those of any other English writer. Goldsmith's "She Stoops to Conquer" and Sheridan's "The School of Scandal" are very noteworthy. In France the drama was greatly improved by the advent of Corneille, who is regarded the founder of the higher drama in that country. Among the most distinguished of the later French dramatists are Hugo, Racine, Voltaire, and Molière.

The German drama was at first largely instituted by adaptations from the Italian and French, but scholarly additions were made by Lessing in 1755. He was followed by Schiller and Goethe, who rank among the best dramatists of modern times, the latter being regarded equal to Shakespeare by many critics. Schiller's "Wilhelm Tell" and Goethe's "Faust" and "The Sorrows of Werther" hold the stage with unceasing interest. Other noted German dramatic writers are Brentano, Körner, Schlegel, Ludwig, Freytag, Laube, Kotzebue, and Von Moser. Hermann Sudermann, author of "Johannesfeuer," is one of the most recent German dramatists. The Dutch drama had its rise in the 17th century by the classical tragedies of Koster, and reached its acme in Vondel. Among the chief Scandinavian dramatists are Heiberg, Ibsen, Oehlenschläger, and Björnson.

The American drama originated by amateur players at Quebec, Canada, in 1694, though it is likely that the Spaniards introduced the stage in Mexico at an earlier date. Puritans looked upon dramatic art with disfavor and passed a law whereby players and spectators were fined five dollars on conviction of having participated in performances. This law was in force for fifty years. A company attempting to give a performance at Philadelphia in 1749 was bound over to their good behavior. The originators next went to New York, where they gave performances for sixteen months consecutively, the advertisement including "The Historical Tragedy of King Richard III., Wrote Originally by Shakespeare, and Altered by Colley Cibber, Esq." In the beginning of the 19th century the drama came into general popularity, first in the larger cities and later in towns and villages. John D. Burke, slain in a duel in 1808, wrote the successful plays, "Joan of Arc" and "Bunker Hill." John H. Payne, author of "Home, Sweet Home," wrote sixteen plays, while both George P. Morris, author of "Woodman, Spare That Tree," and Samuel Woodworth, author of "The Old Oaken Bucket," wrote numerous masterpieces. Among the noted American dramatists are Epes Sargent, W. E. Burton, and John Brougham. Denman Thompson's "Old Homestead" and Harriet Beecher Stowe's "Uncle Tom's Cabin" have been played more extensively than any others.

DRAPER (drā'pẽr), **Andrew Sloan,** educator, born in Westford, N. Y., June 21, 1848. He studied law at Schenectady and practiced that profession at Albany. In 1881 he was chosen a member of the State Legislature, and served as judge of the United States court of Alabama claims in 1884-86. He was a member of the school board of Albany, superintendent of public instruction in New York, superintendent of the schools at Cleveland, Ohio, and regent of the University of Illinois. Among his numerous writings are "The Powers and Obligations of Teachers," "American Schools and Citizenship," "A Teaching Profession," "The Authority of the State in Education," and "The Rescue of Cuba." He died April 27, 1913.

DRAPER, Henry, scientist, son of J. W. Draper (q. v.), born in Prince Edward County, Virginia, March 7, 1837; died in New York, Nov. 20, 1882. He was educated at the University of the City of New York, in which he became professor of physiology in 1860, and later was made dean of the medical faculty. He made an extensive tour through Europe, studying en route, and resided at Hastings-on-the-Hudson after his return to America. Congress appointed him to observe the transit of Venus in 1874. He announced the discovery of oxygen in the sun by photography in 1877 and promulgated a new theory of the solar spectrum. Among his writings are "Changes of Blood Cells in the Spleen," "A Text-Book of Chemistry," and "On the Construction of a Silver Glass Telescope."

DRAPER, John Christopher, physician, son of John William Draper, born in Prince Edward County, Virginia, March 31, 1835; died Dec. 20, 1885. He graduated at the University of New York, where he was professor of analytical chemistry in 1858-71. He was made professor of natural science in the College of the City of New York, and was for a time professor of chemistry in the medical department of the University of New York. Besides contributing to a large number of scientific journals, he published useful books on chemistry and medicine. They include "A Text-Book of Medical Physics," "Anatomy, Physiology and Hygiene," and "A Practical Laboratory Course in Medical Chemistry."

DRAPER, John William, American writer and chemist, born near Liverpool, England, May 5, 1811; died at Hastings-on-the-Hudson, N. Y., Jan. 4, 1882. He took a course in chemistry at the University of London, emigrated to the United States in 1832, and pursued advanced studies in the medical department of the University of Pennsylvania. In 1836 he became professor of chemistry and philosophy in Hampden-Sidney College, Virginia, and two years later was made professor in the University of New York. In 1840 he was chosen president of the medical department of that college, which position he held 33 years. He made many discoveries in chemistry by means of experimental investigation. He found a way to obtain accurate photographic representations of the moon's surface, contributed to the knowledge of prismatic and spectrum analysis, and successfully photographed the diffraction spectrum. Many learned societies extended honors to him. Among his writings are "Forces that Produce the Organization of Plants," "History of the Intellectual Development of Europe," "Thoughts on the Future Civil Policy of America," "History of the Conflict between Religion and Society," "History of the American Civil War," "Text-Book in Natural Philosophy," and "Human Physiology."

DRAVE (drä'vẹ), an important river of Europe, rising in the eastern part of the Tyrol. Its course is through Carinthia, Styria, and Croatia. It forms the boundary between Hungary and Slavonia, after which it joins the Danube a few miles east of Eszek. The entire length is 450 miles, about half that distance being navigable. The valley traversed by it is well populated and noted for its great fertility. Marburg, Lienz, and Eszek are among the cities on its banks.

DRAVIDIANS (drȧ-vĭd'ĭ-ạns), the name applied to a group of non-Aryan races in the southern part of India. They include the people who speak a number of dialects, including the Canarese, Malayālam, Tamil, Telugu, and a number of others. The Dravidian languages show no affinity to the Aryan or Indo-Germanic, except that these tongues have been modified on account of contact with the Sanskrit. About twelve or fourteen dialects are spoken and some of these are intelligible to two or more of the different members of the group, but most of them speak only one dialect. The Tamil and Telugu show the highest degree of culture and are the dialects of about one-half of these Dravidian people.

DRAWING (dra̤'ĭng), the art of delineating the forms of objects on a flat surface by means of lines drawn with a pen, crayon, pencil, or some similar object. It is taught as a branch of study in many of the common schools and colleges, and is employed in making charts and maps. Architects employ drawing in preparing plans and views of buildings, machinery, and figures. In *geometrical* and *mechanical* drawing instruments are used to guide the hand, while *freehand* drawing is done from objects without an artificial guide, as the name indicates. Mechanical drawing includes *topographical* drawing, *ship draughting,* and *architectural* drawing. Another class of drawing, the *perspective,* aims to represent the aspect of an object from a given point of view as it appears to the eye. It approaches the artistic or freehand drawing in its results. This branch of instruction has proved of inestimable value and is an aid in determining relative proportions and forms. Paintings in water colors and sketches or colors in oils, in the arts, are usually called drawings. See **Painting.**

DRAYTON (drā'tŭn), **William Henry,** statesman, born at Drayton Hall, on the family estates in South Carolina, in 1742; died Sept. 3, 1779. He studied at Westminster School and Baliol College, Oxford, England, and returned to South Carolina in 1764. Soon after he was admitted to the bar and wrote extensively on political topics. In 1771 he was appointed privy councilor for the province of South Carolina, but was suspended from his offices under the crown for publishing pamphlets in favor of the American cause. He was made a member of the council of safety and later became its president, and was presiding officer of the Provincial Congress in 1775. Later he served as a delegate to the Continental Congress. He wrote a work entitled "Memoirs of the American Revolution."

DREAMS, the ideas or images of a sleeping person, in which he seems to see things real and substantial. Dreams are accounted for by some writers as resulting from uninterrupted trains of ideas passing through the mind at all times at night as well as by day, and as being modified and influenced largely by the thoughts of the objects in which the mind is engaged during the period of wakefulness. A man full of projects in business and perplexed with anxieties goes to bed with an active mind, which is excited even in sleep by the importance of his daily occupation. This leads to imperfect sleep and vivid dreams, which remain in the memory after awaking. Irregular meals, eating shortly before retiring, and other irregularities are prolific causes of mental activity during sleep, but the trend of the mind is influenced very largely by the activities experienced during the day.

In dreams the train of ideas appears as a series of events passing before the eye, or as objects affecting the senses. The periods in which dreams occur are often exaggerated, since what appears as a long period of time may be but a few minutes or seconds. The ideas seeming to pass before the eye may cover a brief period or extend over several years, though the actual time elapsing may be but a few minutes. Pleasurable dreams result to those who live a life of purity and experience an absence of remorse, while the contrary affect those whose minds are engaged frequently in evil thoughts and imaginations. There are cases on record where men claimed to be aided in professional and business engagements by the effect of mental activity during sleep. Benjamin Franklin expressed the view that during dreams he was instructed at various times regarding issues that were subject to mental study. Coleridge asserted that he composed several hundred lines of "Kubla Khan" during a dream and committed them to paper before he awoke.

DREDGING (drĕj′ing), a term applied by engineers to the process of excavating material under water and thereby improving the means of navigation. Many machines for this purpose have come into use, but they may be classed either as *dipper* or as *grapple* dredges. The former consist of spoons or scoops for scraping sand, mud, and silt from the bed of a stream, canal, harbor, dock, or some other body of water. On the other hand, the grapple dredges are fitted to close around solid earth or stone. In this way the landing places for vessels as well as channels and inlets are not only deepened, but are made safer and more serviceable for large vessels. The work is done by steam power applied to machinery. The deposits at the bottom of the water are torn up and raised sufficiently to be dumped into dredge boats, which carry them off, depositing them at some distance from the place to be deepened. The process of securing oysters, plants, and shells from the bottom of the water is usually called dredging. The common dredge for catching oysters consists of a scraper attached to an iron frame. A bag fastened to the frame at the rear of the scraper receives the oysters, from which they are taken after being landed on the shore or on boats. Naturalists employ an apparatus for securing specimens of marine forms for examination, which is constructed similar to that of an oyster dredge.

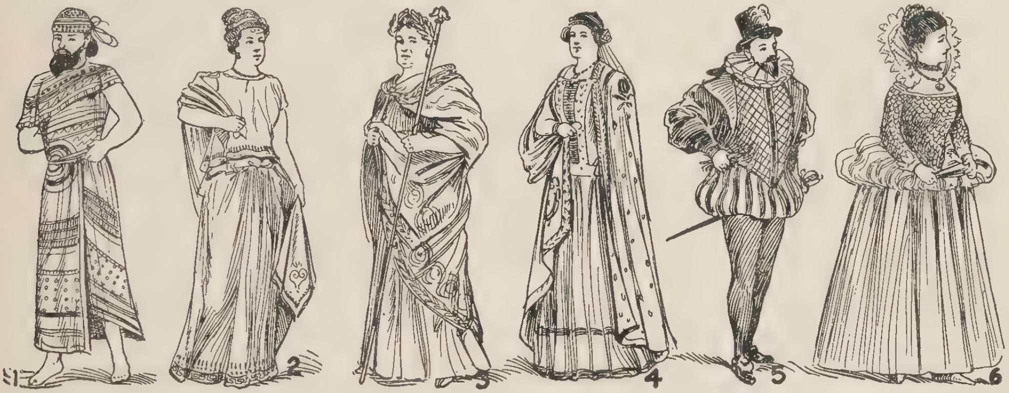
DRED SCOTT DECISION, a decision of the United States Supreme Court delivered by Chief Justice Taney on March 6, 1856, regarding a slave named Dred Scott. This slave was in the possession of an owner in Missouri. He was taken to Illinois and then to Minnesota, which was at that time a Territory. Illinois and Minnesota were then free soil, and on this Dred Scott was kept for a number of years, after which he was taken back to Missouri. After the death of Dr. Emerson, the claimant of the slave, Dred Scott with his family claimed to be free, on the ground that they had been taken to free territory and could not be held in slavery after returning to Missouri. In the decision it was stated that Scott had no right to sue for liberty, because no colored person was regarded by the Constitution as a citizen and that colored persons had no rights which a white man was bound to respect. The decision attracted much attention, because it degraded the slave to the level of a machine and showed no respect for human sentiment.

DREIBUND (drī′bo͝ont), the compact formed between Germany, Austria, and Italy for mutual defense and friendship. Germany and Austria formed the Dual Alliance in 1879, and, by admitting Italy to the compact in 1882, the Dual Alliance was formed into a Dreibund. This compact long remained a balance of power in the continent of Europe and provided an important safeguard in the maintenance of peace, but Italy withdrew from it in 1915.

DRESDEN (drĕz′dẹn), a city of Germany, capital of the state of Saxony, situated in the valley of the Elbe River. A number of boulevards lead up to and surround the city, while extensive orchards and vineyards abound in the vicinity. Portions of the city are on both sides of the Elbe, the newer part being especially beautiful by reason of broad streets and fine pavements. The population is largely Lutheran in religion and supports numerous fine churches, many of which have important connection with historical and international events. Many of the government buildings are beautiful in the interior, though rather plain externally. The royal library contains 450,000 volumes, including many rare and valuable specimens of ancient writings and numerous manuscripts. The museum attached to the library is famous for its ancient treasures as well as productions of recent artists and sculptors. Among the municipal buildings are several for local government and for public instruction. Besides the public school system, there are the Polytechnic

School, the Conservatory and School of Music, the Academy of Fine Arts, and other noted educational institutions. Dresden is particularly famous for its gallery of pictures, which is counted among the most valuable in the world. It contains 30,000 pictures and 375,000 drawings and engravings.

The recent rapid growth of Dresden is due to its large commerce and industrial establishments. Among the chief manufactures are pianos, porcelain, jewelry, books and stationery, glass, chinaware, clothing, fabrics, and machinery. Local and general commerce is facilitated by extensive electric lines and numerous railroad connections, as well as by navigation on the river. It maintains systems of waterworks, sewerage, electric and gas lighting, and public baths. The streets are kept in a clean condition and in many places are adorned by monuments and fountains. Among the public parks and gardens are the Zoölogical Garden and the Grosser-Garten.



STYLES OF DRESS.

1, Assyrian. 2, Greek. 3, Roman. 4, German, 14th Century. 5, Spanish, 16th Century. 6, English, 16th Century.

Dresden is mentioned in history in 1206, and has long been a city of importance, both from a commercial and educational standpoint. The sovereigns made it their residence since 1485. It was almost entirely destroyed by fire in 1491, but subsequently it was extended and improved by Augustus the Strong. The enlargements and valuable improvements made by Augustus I. and II. in the first half of the 18th century gave the city a basis for rapid growth during the last century and the impetus it has at present. During the Seven Years' War, the Napoleonic wars, and the revolution of 1849 it suffered severe losses by fire and military destruction, which have since been entirely overcome. Population, 1920, 546,882.

DRESDEN, Battle of, a battle at Dresden, Germany, on Aug. 27, 1813. The French army of 30,000 men occupied Dresden and the allied army of Austrians, Prussians, and Russians, commanded by Schwarzenberg, appeared before it on Aug. 23. Napoleon came with the main army to relieve it on the 26th and a great pitched battle was fought the following day, in which the allies were defeated. The French lost about 7,500 men in killed and wounded, but the allies lost the same number and 20,000 of their men were taken prisoners.

DRESS, the costume or clothing worn by a person as a protection against heat or cold, and at the same time to furnish the conventional covering of the body in the mode or style peculiar to a people. Ideas concerning modesty in dress have differed widely among the people of different ages, but a great majority of the civilized nations have worn garments that cover all parts of the body, except the head and hands. It is quite necessary that wearing apparel should not be uniform in all countries, since the seasons and general climatic conditions vary greatly, making it imperative that the clothing should differ materially according to the requirements of the climatic and other conditions which prevail.

The history of dress is quite as old as that of nations, but the earliest information is based upon traditions and rude sculptures. A good idea of some kinds of costumes is obtained from the mummies of Egypt and we have reasonably authentic accounts of the garments worn by the Babylonians, Assyrians, and Egyptians. Mention of raiment for the body is made in many places of the Old Testament, such as the vestments worn by the early priests, but the first account we have is of the rude covering of the body made with leaves by Adam and Eve. In Exodus xxviii., 42, this injunction is given: "And thou shalt make them linen breeches to cover their nakedness; from the loins even unto the thighs they shall reach." This passage and many others refer to sacerdotal vestments. Frequent mention is made of the raiment of needlework, of purple and fine linen, and of the sackcloth of sorrow and repentance. The mantles worn by the Hebrews were four-cornered and were bordered with fringes and ribbons of blue. The Assyrians were advanced in the arts of dyeing, embroidering, and weaving, and their attire was both convenient and beautiful. They wore sandals after the style of the Egyptians, and their fabrics were made quite largely of flax and cotton.

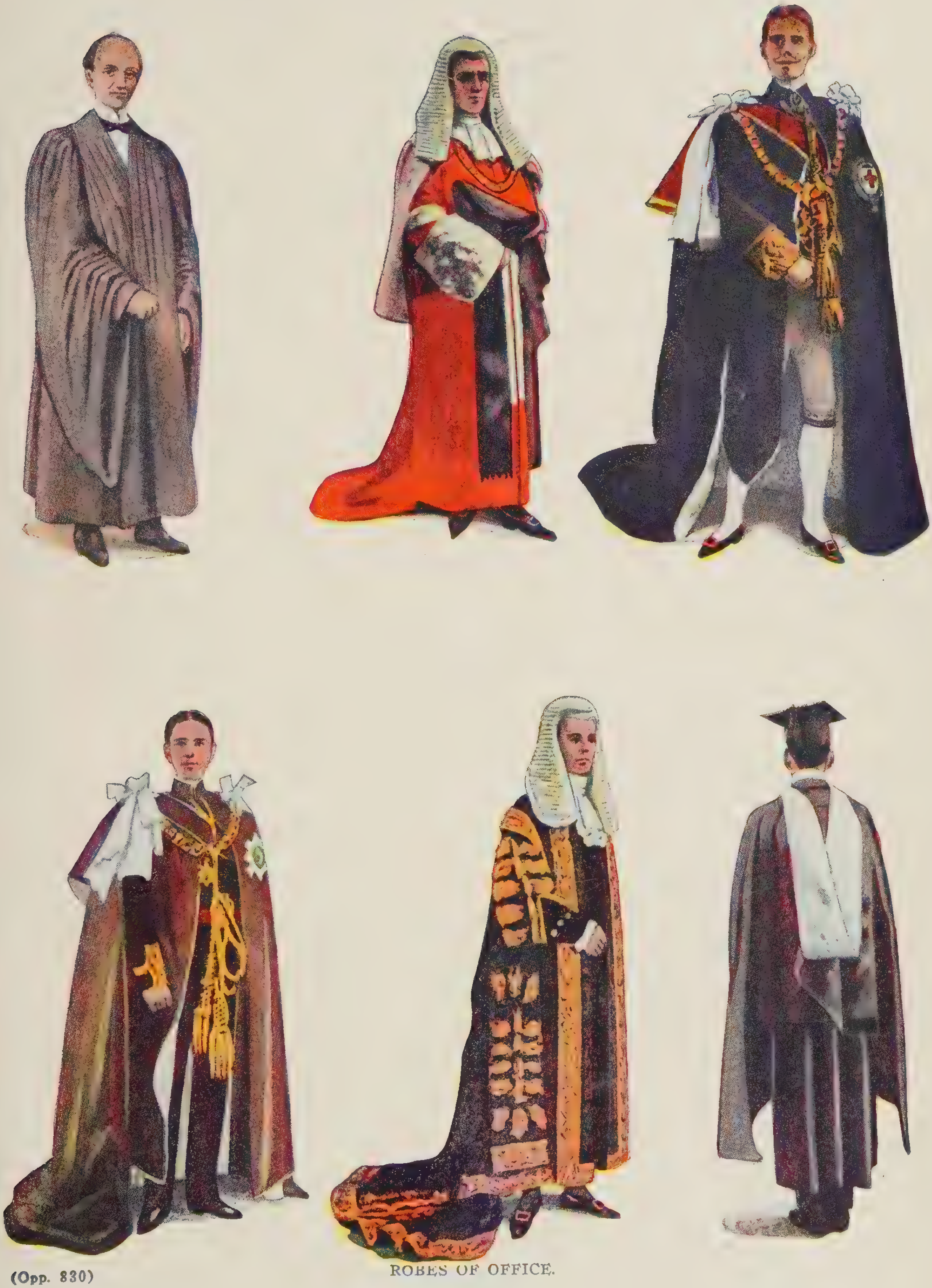
The Greeks sought to maintain grace and beauty in the fashion of their clothing and wore garments that gave perfect freedom of action to the body. The *chiton,* a close-fitting but long garment, was worn both by men and women and corresponded to the modern shirt. Over this the men wore the *himation,* which was open on one side, and the women used a girdle below the bust, using a *peplos,* a sort of woolen shawl, as an outside garment. A kind of breast support was worn by both Greek and Roman women, but this differed from the modern corset in consisting of a single band of cloth, and it did not have the objectionable tendency of compressing the body. Though the character of dress in Greece and Rome was simple, the garments were well adapted to the climate and conditions of life, and the wealthy dignified them by fine embroidery and ornamentations. The *tunic,* a kind of chiton, was used extensively in Rome, over which an outer garment, the *toga,* was worn. Considerable attention was given to covering of the feet by *sandals* or shoes, and a legging in the form of the high military buskin furnished protection against extreme cold.

The barbarians of Northern Europe wore loose garments made principally of wool, and their chiefs had shirts with sleeves and striped *pantaloons.* Their dress was greatly influenced by the Roman invasion, but from them the Romans came to value the *trousers* as of practical utility. However, they are not the originators of this garment, but this distinction belonged to the Aryan people of Asia, who came across the mountains into the valley of the Euphrates, and from them it came to be introduced among the people of Europe. While the Chinese and Japanese have steadily held to the dress worn from a remote period in history, the people of Europe, on the other hand, acquired a love of change in the form of dress. Careful cutting and fitting displaced the simple and loose garments of the early centuries of the Christian era, and the clothing came to be firmly sewed and closely fitted about the hips, bust, and waist. The loose garments gave way to the coat, vest, and pantaloons worn by men, who laced or buttoned their garments tightly and dressed the feet and legs by using tight-fitting stockings and shoes.

Exaggeration in the head gear came into vogue about the 13th century, when women began to wear the *hennin,* a very large covering of the head. Later the *miter* and the *horned headdress* coverings for the head became celebrated, against which sermons were preached from the pulpit until they went out of use about the 16th century, but were followed by the grotesque and peculiar footwear in the time of Henry VII. The modern *corset* came into use about the time of Catherine de Medici, and starch was employed largely in preparing the absurd dresses and enormous ruffs of the time of Queen Elizabeth. In 1583 Stubbs wrote: "There is a certain liquid matter which they call starch wherein the devil hath learned them to wash and dye their ruffs, which being dry will then stand stiff and inflexible about their necks." The *farthingale,* a contrivance which extended the skirts out at the hips, came into use among women about this time, when all of the clothing tended toward excess in shape and ornamentation.

The French Revolution was followed by a tendency to simplify all articles of apparel, and may be said to be the beginning of the modern era of fashions. At present the older European costumes are worn only in isolated or remote sections, while the styles of European people are more or less similar and are changed quite uniformly. This is made possible through the publication of periodicals devoted to fashions, in which the newer styles are shown in elaborate plates and discussed quite clearly in directions for selecting the materials and making the garments. The style of dress changes more readily among Europeans than among any other class of people, and may be said to be transitory as compared with the styles of the peoples of Asia and those not materially advanced in civilized art. Indeed, a well-concerted movement for dress reform was inaugurated in 1873, under the auspices of the Crown Princess of Saxony, Germany, who pointed out the evils of unhygienic clothing worn by women. The following year an organization was formed at Boston, the National Dress Association, which declared against shoes with high heels and pointed toes, against wearing heavy veils, against the use of tightly laced corsets, and against garments that lodge a heavy weight on the hips. Though all the measures advocated by associations of this kind have not been looked upon with favor, it may be observed that there is a tendency toward more rational styles of dress for women.

DREW, Daniel, capitalist, born in Carmel, N. Y., July 29, 1797; died Sept. 19, 1879. His early employment was that of a cattle drover, but he later engaged in steamboat building, railroad enterprises, and speculations on Wall Street, New York City. By successful management he amassed a fortune estimated at $12,000,000, but subsequent losses caused him to go into bankruptcy. During his time of prosperity he showed a philanthropic spirit in donating to various educational and benevolent institutions, among them the Drew Theological Seminary, New Jersey; the Wesleyan University, Connecticut; and the Drew Ladies' Seminary, Carmel, N. Y. His donation to the Theological Seminary amounted to about $1,000,000. It is located at Madison, N. J., and is one of the



(Opp. 830)

ROBES OF OFFICE.

Judge of the Supreme Court of the United States.

Most Ancient Order of the Thistle.

Chief Justice of England.

Lord High Chancellor of England in robes of State.

Most Noble Order of the Garter.

Master of Arts at Cambridge University.

highly successful institutions under the direction of the Methodist Episcopal Church.

DREW, John, actor, son of John Drew and Louisa Drew, born in Philadelphia, Pa., Nov. 13, 1853; died July 9, 1927. He was trained by his parents, both noted as actors, and made his first appearance at the Arch Street Theater, Philadelphia, in 1872. Three years later he began to act with much success at the Fifth Avenue Theater, New York City, where he played successful rôles under Fanny Davenport, Edwin Booth, and other celebrated actors. From 1880 until 1892 he played almost continuously with the Augustin Daly Company and in the meantime visited Europe. He began to star on his own account in 1892 and appeared in "The Butterflies," "The Liars," "A Marriage of Convenience," "The Masked Ball," "The Duke of Killiecrankie," and "Richard Carvel." He took part in the classic comedies as *Charles Surface* in "The School for Scandal" and as *Petruchio* in "The Taming of the Shrew."

DREXEL, Anthony Joseph, banker and philanthropist, born in Philadelphia, Pa., in 1826; died in Carlsbad, Bohemia, June 30, 1893. He was identified with the firm of Drexel & Co., Philadelphia, at the early age of thirteen years. At the death of his father he succeeded to the management and extended the business by establishing branch offices in New York, London, and Paris. In 1876 he united with the Rothschilds and others to form a syndicate, which placed on the market bonds of the United States amounting to $300,000,000 at four and one-half per cent. He was connected with the greatest financiers of the world, negotiating loans and stocks for various railroads, canals, and improvement companies. His estate at the time of his death was estimated at about $30,000,000. Among the institutions that he endowed largely are Drexel Institute, Philadelphia; Childs-Drexel Home for Aged Printers, at Colorado Springs, Colo.; Drexel Institute of Art, Science, and Industry; and the German Hospital in Philadelphia. The total donations made to institutions of this character amounted to more than $2,000,000.

DREXEL INSTITUTE OF ART, SCIENCE, AND INDUSTRY, a coeducational institution founded by Anthony J. Drexel at Philadelphia, Pa., in 1891. This institute was established to train and instruct young men and women in the industrial arts and sciences. The courses include those of mechanic arts, applied and fine arts, commerce and finance, electrical engineering, domestic science, mechanical drawing and machine construction, physics, English, chemistry, and mathematics. Evening classes are maintained in the departments in addition to the regular academic instruction, and educational work is promoted through free public lectures. This institution has a library of 60,000 volumes, an endowment of $3,000,000, and buildings and equipment worth $5,000,000. The students in the day classes number 1,650 and in the evening courses, 2,000.

DREYFUS (drȧ-füs′), **Alfred,** French military officer, born in Alsace, Germany, Oct. 9, 1859. He was educated for a military career, became captain in a regiment of artillery, and in 1894 was accused of having committed treason at the time he held an office in the second bureau of the general staff. The charge brought against him was an accusation of having sold some secrets to certain military officers of Germany. He insisted upon his innocence, but was publicly degraded and in 1895 was imprisoned on the Ile du Diable, an island near the coast of French Guiana. Soon after a movement was begun to collect facts which would prove his innocence, but no material progress was made until Emile Zola wrote a famous letter, in which he charged the general staff of the army with conducting a partial trial and suppressing proofs of the innocence of Dreyfus. This affair caused much excitement in France for more than five years. The case was reopened for trial in 1899 and his punishment was fixed at imprisonment for ten years, but he was soon after pardoned. It became evident that the case rested upon a forgery made by Major Esterhazy, who was envious of the accused. In 1903 the case was again reopened and after three years he was adjudged innocent and was restored to his position in the army. He retired with the rank of major in 1907.

DREYSE (drī′zẹ), **Johann Nicholas,** inventor of the needle gun, born in Sömmerda, Germany, Nov. 20, 1787; died Dec. 9, 1867. He learned the occupation of a locksmith in the shop of his father, and in 1806 followed his calling at Altenburg and later at Dresden. In 1809-14 he was employed at a gun factory in Paris, working under Pauli, a Swiss officer patronized by Napoleon I. After the fall of Napoleon, he returned to Prussia and established a factory for making machinery and utensils. In 1827 he invented the needle gun without breech-loading and completed the breech-loading needle gun in 1836. The gunnery established by him in 1841 ultimately employed about 1,500 workmen and supplied weapons for the armies of all the German states. The rank of nobility was conferred upon him and his family in 1864.

DRIFT, a loose accumulation of transported matter, constituting a peculiar geological formation found in the northern part of Europe and Asia and the eastern and central portions of North America. The drift matters consist of various forms of earth, which in many places are from fifty to a hundred feet in thickness. The surface of drifts is usually smooth with parallel ridges extending for some distances, and at places one set crossing another deposited at an earlier age. Extensive beds of gravel, pebbles, and sand that characterize the drifts are thought to have originated from adjacent rocks, while large stones show from their composition that they were carried long distances. Many of the larger rocks and bowlders weigh from a hundred pounds to several tons. Those found in the northern drift of Europe extend to about 50° north latitude and in North America to about 40°. A similar drift is found in the Southern Hemisphere, which disappears between 40° and 50° south latitude. These drifts are more marked as one approaches the poles and gradually diminish in thickness toward the Equator. Near the Equator several similar drifts are found, though these are deposited usually around some great mountain, and traces of their movements are evidenced by scratches and erosion on the bowlders of the mountain region.

The cause of drifts is attributed to the action of ice moving southward largely in the form of glaciers. The theory includes the view that in ages far remote the polar regions possessed a warm climate, which later gave way to cold, thus causing the formation of great fields of ice in the high latitudes. Fed by the polar snows, immense glaciers moved toward the Equator and melted as they reached the warmth of the lower latitudes. In this movement the great sheets of ice smoothed the surface of the rock and made scratches and erosions until they melted in the sun of warmer regions. Many of the bowlders and gravel found in all portions of the drift region bear evidence that they were moved long distances and dropped from the glacier carrying them as the warmer regions were reached.

DRILL, a metallic tool for boring holes in hard substances, such as stone, metal, wood, or ivory. The form and size depend upon the material in which the work is done. In stone drilling the tool has either a rotary movement or is lifted and dropped alternately. The drills for rock boring are made largely with black diamond, which constitutes the cutting edges. In metal and wood the action is rotary and the tool is made with two cutting edges, against which the work is pressed as the drill revolves.

DRILLING, a method of sowing seeds in parallel rows instead of planting them in hills or sowing them broadcast. Among the crops commonly drilled are peas, beans, carrots, onions, and other vegetables. These are cultivated more easily and the ground is kept in better condition when drilled so machine cultivation can be introduced. Seeds generally sown broadcast, such as wheat, barley, and flax, are sometimes drilled in rows close together, especially in poor soil, where bone dust or other fertilizing is needed. Corn is sometimes drilled, but is generally planted in hills, as cross cultivation is possible when parallel rows extend in two directions at right angles.

DROMEDARY (drŭm'ē-då-rȳ), the Arabian camel, so called from its ability to travel with much speed. It differs from the Bactrian camel in that it has a single hump on its back. The name is applied commonly only to one-humped camels that are noted for their swiftness in travel. See **Camel.**

DROWNING (droun'ĭng), the form of death that results from suffocation in water or other liquids. It was employed as a mode of capital punishment in many European countries, but long since went out of use as a form of punishment in practically all parts of the world. This method of execution was abolished in Switzerland in 1652, Scotland in 1685, Austria in 1776, and Iceland in 1777.

The deaths which result from drowning at the present time are due largely to accidents, and by careful treatment life may be restored within a limited time after breathing has ceased. Recovery is possible only so long as the heart beats, after that it becomes impossible. That death resulted from drowning is evidenced by finding water in the lungs, and usually by small objects held in clenched fingers at which the drowning person grasped while struggling to escape danger. In one or two minutes after submersion complete insensibility ensues and death occurs in from two to five minutes. There are several methods of restoring persons apparently dead from drowning. One of the most common methods is to pull the body, face downward, over a roll of clothing placed under the stomach, by which the water may be expelled from the chest. The head should be supported during this movement, and the body turned on the back occasionally, though when occupying this position the shoulders should be supported.

To restore breathing in persons apparently drowned it is best to kneel over the body and place both hands on the lower part of the chest, immediately below the lowest ribs. By pressing forward the ribs may be raised, thus permitting air to enter the chest as the capacity is enlarged. As soon as the ribs are raised to the greatest possible extent, they are allowed to recoil to their usual position, by which means the air is expelled. By repeating this process at least twenty times per minute a tendency to restore breathing will soon develop. At the same time other persons should be rubbing the body and limbs upward with warmed flannel or their hands for the purpose of stimulating the flow of blood. Small quantities of hot brandy and water, hot coffee, or some other stimulant may be administered as soon as the patient has been restored to a condition in which he is able to swallow. To restore and maintain warmth after a case of apparent drowning is essential. This can be done best by means of rubbing, covering the body with warm clothing, and placing the patient in a suitable bed.

DRUIDS (drụ'ĭdz), the priests of the early Celts of Gaul and Britain. Little is known of this class of people, though Julius Caesar gave some details of interest in regard to their worship and manner of living. He described them as a class that possessed chief authority among the Celtic people; that they had some knowledge of mathematics, philosophy, and astronomy; and that their religion was similar to the forms practiced by the Brahmans of India, the Chaldeans of Syria, and the Magi of Persia. They acted as judges, possessed complete control over the people, and were the teachers of the young. Their worship was in groves, and human sacrifice was not uncommon. The mistletoe and oak were sacred in their worship. A chief druid was elected by the people, who held his office for life. Ruins of their stone temples are still found in France and Great Britain. They were suppressed or exterminated at the time of the Roman invasion.

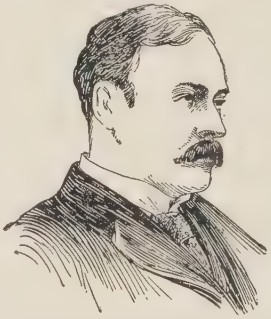
DRUM, a musical instrument of great antiquity. Several forms are in use. The common drum is made by stretching parchment over the heads of a wooden cylinder or a metallic vessel, which may be slackened or tightened at will by means of cords attached to screws or sliding knots. The drum mostly used is the *long* or *bass drum* with two heads, on both ends of which playing is done with stuffed-knob drumsticks. Another kind is the *side drum,* having two heads, the upper being the only one played by means of two sticks of wood; the lower head is formed with strings of catgut stripped across its surface. This kind is commonly called a *snare drum.* Another kind is the *kettledrum,* which is usually employed in pairs. It is formed of hollow brass or copper basins, on which a parchment is fastened by means of an iron ring. These instruments are used mostly in orchestras and military bands, where they are called *tympani.* The ancient Egyptians employed them in martial music and, like the Indians, beat their long drums with the hands. Bacchus is said to be the inventor of the drum. It is reputed that he gave the signal of battle by means of that instrument and the cymbal. The sculptures of Egypt and other ancient countries contain numerous inscriptions of drums, illustrating their use in military parades and in the conflict of battle.

DRUMMOND (drŭm′mŭnd), **Henry,** clergyman and scientist, born in Stirling, Scotland, in 1851; died March 11, 1897. He was educated at the University of Edinburgh and Tübingen University, Germany, and was ordained as minister of the Free Church. In 1884 he was chosen professor of science in the Glasgow Free Church College, in which and in the lecture field he attained much success. He traveled in America and Africa for geological research and scientific inquiry into the life and habits of various unknown species of insects and animals. His writings on scientific subjects and lectures relative to foreign travel attracted much attention. His religious work carried on in the colleges of Scotland and England ranked high in the light of reform, effecting by his advanced and forcible teaching a wholesome change in the atmosphere of college and university life. Among his writings are "Tropical Africa," "Natural Law in the Spiritual World," "The Greatest Thing in the World—Love," and "The Ascent of Man."

DRUMMOND, Thomas, engineer, born in Edinburgh, Scotland, in 1797; died April 15, 1840. He studied at the high school of Edinburgh and later at the Royal Military Academy, Woolwich, and was noted as a student in mathematics. In 1815 he entered the Royal Engineers, and subsequently assisted Colonel Colby in the trigonometrical survey of the United Kingdom. He is the inventor of the lime-ball light, known as the *Drummond light.* In 1835 he became Undersecretary for Ireland.

DRUMMOND, William, poet, born at Hawthornden, near Edinburgh, Scotland, Dec. 13, 1585; died Dec. 4, 1649. He studied at the high school and the university of his native city, graduating in 1605, and spent several years in traveling on the continent. After 1609 he resided at Hawthornden and gave his attention to literary pursuits. Ben Jonson visited him in 1618 and an account of the visit is preserved in Drummond's "Notes of Ben Jonson's Conversation with William Drummond." He was attached to the High Church principles of the Jacobites, and was the first Scottish writer to displace the native dialect by using the language of the Elizabethan writers. He wrote a history of Scotland and published "Poems," "A Cypress Grove," and "Tears on the Death of Meliades."

DRUMMOND, William Henry, physician and surgeon, born in Leitrim County, Ireland, April 13, 1854; died April 6, 1907. He came to Canada at an early age and attended McGill University, where he graduated in medicine, and in 1884 began the practice at Montreal. He lectured before many literary societies and mixed audiences in Canada and the United States, and is the author of poetic works and many verses in the French-English dialect. His books include "Johnnie Courteau," "The Habitant, and Other French-Canadian Poems," "The Voyageur," and "Phil-o-rum's Canoe."



WILLIAM H. DRUMMOND.

DRUMMOND ISLAND, an island in Lake Huron, one of the Manitoulin group, forming a part of Chippewa County, Michigan. It is about ten miles wide and twenty miles long.

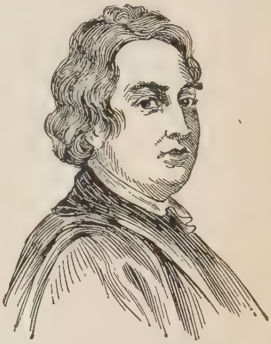
DRUMMOND LIGHT, an intense light invented by Thomas Drummond, of the British navy, in 1826. It is produced by turning two ignited streams of gas, one of hydrogen and the other of oxygen, upon a ball of lime. This light was first used in the coast survey service by placing it in a peculiarly shaped mirror, which served to reflect the rays in converging lines so the entire light was focused toward a central point. The light can be thrown in a straight line a distance of about one hundred miles.

DRUSES (drṳ′zẹz), a peculiar political and religious people inhabiting the mountains of Lebanon and Anti-Lebanon. They are of mixed Syrian and Arabian origin and combine certain tenets of the Mohammedan with several of the Christian religion, and constitute a secret religious society. Their origin is found in El-Hakim Biamr-Allah, the sixth Fatimite caliph of Egypt, a fanatical ruler who lived in the 11th century. According to tradition he disappeared from his subjects while walking in the vicinity of Cairo, and his followers were led to believe in his future return to earth to reign over them, though the natural explanation is that he was probably assassinated. A Russian named Ismail ed Derazi proclaimed the tenets of the Druses with such zeal in Lebanon that the converts were named after him and not after El-Hakim. They number between 75,000 and 100,000, are engaged largely in producing and manufacturing silk, and are noted for their sturdy resistance to Turkish dominion.

The Druses believe in the unity of God, who, they think, was manifested in the person of several individuals, but last of all in El-Hakim. Their day of worship is Thursday and their doctrines hold strictly to the transmigration of souls. In 1860, 12,000 Druses were cruelly massacred by the Maronites, when neither male nor female children were spared. The uprising was about to terminate in a general conflict between Christians and Mohammedans, but was suppressed by the arrival of French and Turkish troops. At present they are guaranteed certain religious and political liberties by Turkey, to which country they pay an annual tax. The three classes into which their adherents are divided include princes, chiefs, and the people. The greatest amount of knowledge obtained of these people was published by a Frenchman named De Sacy in 1838, entitled "An Exposition of the Religion of the Druses."

DRYADES (drī′ădz), the tree goddesses or nymphs mentioned in the mythology of Greece. Each dryad partook of the characteristics of a particular tree to whose life it was wedded, and ceased to exist when it was felled or so injured that it withered and died.

DRYDEN (drī′dẹn), **John,** famous poet, born in Northamptonshire, England, Aug. 9, 1631; died May 1, 1700. He was the son of a distinguished family, was educated at Westminster School, and became distinguished on account of close application to study and educational research. Later he went to Cambridge, where he was elected to a scholarship, and afterward proceeded to London to fill an appointment as secretary to his cousin, Sir Gilbert Pickering, a devoted friend of Cromwell. After the death of the protector, he wrote his "Heroic Stanzas on the Death of Cromwell," thereby attracting much attention. "Astraea Redux" is a poem written shortly after the restoration of Charles II. as King of England, in which the restoration is hailed with joy. His writings for the stage were the poorest of his works and were criticised adversely on account of an immoral tone and tendency. In 1661 "The Duke of Guises" appeared, and shortly after he published "The Wild Gallant." He was appointed poet laureate in 1670 with a salary of $1,000 a year.


JOHN DRYDEN.

While poet laureate and at the height of his prosperity, Dryden made a contract with several theaters which provided that he was to supply three plays each year, for which he was to receive about $1,500, but the contract was never complied with. In 1681 he published "Absalom and Achitophel," in which he made a sarcastic attack on prominent men, and it was regarded the most personal political satire in England. His "Hind and Panther" was issued in 1687, and, being devoted to a religious discussion, it led to much adverse criticism and abuse, Macaulay calling him "an illustrious renegade." The controversy was due largely to the fact that he had gone over to the Roman Catholic faith, for which he has been both severely criticised and as warmly defended. He was deprived of his laureateship at the Revolution, which brought him to straitened circumstances and induced him to again write for the stage. His fables and satires are masterpieces, though his plays are exaggerated in expression and largely devoid of character. Among other productions worthy of note are "Essay on Dramatic Poesy," "Ode on Alexander's Feast," "Mac Flecknoe," "The Medal," "All for Love," and "The Rehearsal."

DRYING OIL, an oil used in painting and which has the property of drying quickly. The name is applied in a general sense to linseed oil and other seed oils, but particularly to oils of this class prepared with the special view of hastening the drying, which is done by heating with oxide of lead. They absorb oxygen when exposed to the air, hence become a dry, tough mass. Drying oil is used to paint the woodwork and other parts of buildings.

DRY TORTUGAS (drī tôr-too͞'gȧs), a group of ten small islands of coral formation situated southeast of Cape Sable, Florida. They are low and barren and most of the surface is covered with low brushwood. Two lighthouses are maintained by the government, one of which is 150 feet high. Fort Jefferson is an important fortification on Garden Key, and was used as a penal station for Confederate prisoners in the Civil War. Prisoners under sentence for court-martial are still occasionally confined in the fort. For local government the island belongs to Monroe County, Florida.

DUANE (dů-ān'), **James Chatham,** military engineer, born in Schenectady, N. Y., June 30, 1824; died Nov. 8, 1897. He graduated from West Point in 1848, where he became an instructor. Subsequently he was superintendent of fortifications and lighthouses for New York, and later became engineer to the Utah expedition, serving till 1861. In the Civil War he rendered efficient aid in the army of the Potomac and the department of the South. For valuable service in most of the battles of the Wilderness and elsewhere he was advanced to and rank of lieutenant colonel. Later he was promoted brigadier general and retired from the service in 1888. Following his retirement, he was engaged as commissioner on the New York Croton aqueduct.

DU BARRY (dü bȧ-rē'), **Marie Jeanne Bécu,** the celebrated mistress of Louis XV., born at Vaucouleurs, France, Aug. 19, 1743; died Dec. 7, 1793. She was the daughter of a woman named Anne Bécu and was brought to Paris at an early age, where she afterward won many friends among the rich and philanthropic. Louis XV. was captivated by her charms in 1769 and made her his mistress, but she was ostensibly the wife of Comte Du Barry.

DUBLIN, county seat of Laurens County, Georgia, on the Central of Georgia and other railroads. It has brick yards, machine shops, cotton mills, and well improved streets. The chief buildings include the courthouse, city hall, high school, public library, and federal building. It was settled in 1807. Population, 1920, 7,707.

DUBLIN (dŭb'lĭn), the metropolis and capital of Ireland, in Dublin County, on the Liffey River, at the entrance to Dublin Bay. The city is divided into two parts by the river which is crossed by numerous stone and iron bridges. Extensive docks and wharves are located at the mouth of the river. It has many beautiful streets and thoroughfares, the most noted being Sackville Street, which passes through the city at right angles to the river, and is 660 yards long and forty yards wide. The principal public buildings include the castle, the official residence of the chief officer of Ireland; Trinity College; the bank of Ireland; the customhouse; the court of justice; the post office; the commercial buildings; the city hall; and other large structures. Among the most important educational institutions are the Dublin University, Royal College of Science, College of Surgeons, Roman Catholic University, Royal University, Royal Irish Academy for Promoting the Study of Science, Literature, and Antiquities, Royal Hibernian Academy of Painting, Sculpture, and Architecture, and the Royal Zoölogical Society. Phoenix Park is a fine public resort northwest of the city, with an area of 1,760 acres.

The railroad facilities of Dublin are extensive. It has excellent harbor improvements and a considerable commerce. Electric car lines furnish convenient connection with all parts of the city and many suburban districts. All the principal streets are finely paved, beautified by trees and statuary, and lighted by gas and electricity. The chief manufactures are textiles, earthenware, machinery, and sailing vessels. Trinity College, founded by Queen Elizabeth, has a library of 200,000 volumes. Besides this library, there are reading rooms and libraries under the control of the city and educational institutions, and as a whole comprise collections of books, manuscripts, and antiquities of much value in educational arts. The city was captured by the Danes in the 9th century and taken by the English under Henry II. Large portions of the city were destroyed by fire in 1190 and visited by several great conflagrations since. The royal party of England captured the city during the protectorate of Richard Cromwell. James II. held a parliament here in 1681. In 1800 the flag of the United Kingdom was raised over the city, when Ireland became united with England. Population, 1907, 291,842; in 1921, 399,272.

DUBLIN, University of, an institution of higher learning at Dublin, Ireland, established by Queen Elizabeth in 1591. The first University of Dublin was established in 1320, but perished from a lack of an endowment and the dissolution of Saint Patrick's Cathedral by Henry VIII. The official title is College of the Holy and Undivided Trinity, so named in the charter of incorporation. James I. granted it representation in Parliament, and it now is represented by two members in the House of Commons. The senate has power to elect the chancellor and grants degrees. This body consists of "the chancellor of the university, or, in his absence, of the vice chancellor, or such doctors and masters of the university as shall have and keep their names on the books of Trinity College." At present the faculty consists of a prevost, seven fellows, twenty-six junior fellows, and seventy foundation scholars. The fellows are of two grades, senior and junior, the former comprising the chief officers and the latter the larger part of the tutoral force of the college. Instruction is divided into a course covering four years.

Students are admitted by examination. The library contains 260,000 volumes. At Dunsink, five miles from the college, is located the astronomical observatory. The total attendance is about 1,350 students.

DUBOIS (du̦-bois′), a borough of Clearfield County, Pennsylvania, on Sandy Lick Creek, about 125 miles northeast of Pittsburg. It is on the Pennsylvania Lines and the Delaware and Hudson Railroad. Among the noteworthy features are the high school and the public library. The principal manufactures are machinery, flour, railroad cars, overalls, silk goods, leather, window glass, cotton and woolen goods, and hardware. Large quantities of coal and gas are produced in the surrounding country. It was settled in 1873 and incorporated in 1887. Population, 1900, 9,375; in 1920, 13,661.

DUBOIS (du̦-bois′), **Fred T.**, public man, born in Crawford County, Illinois, May 27, 1851. He attended Yale University, graduated in 1872, and in 1880 removed to Idaho and took up a business career. In 1882 he was made United States marshal, serving four years, and was active in the anti-Mormon agitation. He was a territorial delegate to Congress in 1887-91, promoted the admission of Utah as a State, and was the first United States Senator, serving from 1891 until 1897. In 1896 he withdrew from the Republican national convention and supported Bryan as a candidate for President, and in 1901 was elected as a Democrat to the United States Senate.

DUBOIS (dü-bwä′), **Théodore**, organist and composer, born in Rosnay, France, Aug. 24, 1837. He was instructed by local teachers and attended the Paris Conservatory of Music, where he graduated in 1861 and won the Grand Prix de Rome. In 1877 he was made organist in the Church of the Madeleine in Paris, and succeeded Gounod as chairman of the French Academy in 1894. Besides being an officer of the Legion of Honor, he was listed with a number of important foreign societies. He published many orchestral works, numerous cantatas, and several masses that are used widely. A grand opera entitled "Aben Hamet" is an important production, and his "Notre Dame de la Mer" is a popular oratorio.

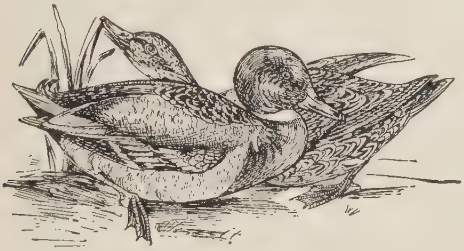
DUBUQUE (du̦-būk′), a city of Iowa, county seat of Dubuque County, on the Mississippi River, 200 miles northeast of Des Moines. It is on the Chicago Great Western, the Illinois Central, the Chicago, Milwaukee and Saint Paul, and the Chicago, Burlington and Quincy railroads. Improved highways connect the city with Des Moines, Omaha, St. Paul, and Chicago. It is regularly platted with wide streets. Several bridges cross the river. The manufactures include wagons, farm machinery, lumber, cigars, utensils, soap, flour, clothing, and hardware. An extensive grain market has caused the building of large elevators. The pork packing establishments produce packed and cured meat. It has large interests in lead, being a depot for the lead-producing districts of northeastern Iowa.

The noteworthy buildings include the courthouse, the post office, the public library, and the city hall. It is the seat of Wartburg Seminary (Lutheran), the University of Dubuque, the Columbia College, an Episcopal seminary, a Catholic see, Iowa Institute of Science and Art, Saint Mary's Academy, and a number of convents and business colleges. Electric street railways, public waterworks, stone and asphalt pavements, a sewer system, and public lighting are among the improvements. The site of the city is a portion of the region occupied by the first permanent settlement in the State. John King established the *Dubuque Visitor* in 1836, the first periodical published in Iowa. It was incorporated as a town in 1837 and was chartered as a city in 1840. Population, 1925, 40,996.

DUCAT (dŭk′ăt), a coin of different value, chiefly of gold, and formerly used extensively in Europe. Ducats were first made in the 11th century by the emperors of Byzantine, and by the next century were used generally in the southern part of Europe, especially in Sicily and Italy. In 1559 the diet of Germany adopted the ducat, and it soon came into use in all parts of Northern Europe. At present it is not issued, except in Austria-Hungary, where the gold ducats are coined for use in foreign trade. The silver ducat used formerly had a value of seventy-five cents to $1.10 and the gold ducat was valued at about $2.32. Ducats coined in ancient Venice were valued at about $1.46.

DU CHAILLU (dü shȧ-yü′), **Paul Belloni,** traveler and author, born in Paris, France, July 31, 1835; died April 29, 1903. He was the son of a trader on the west coast of Africa, and at an early age acquired proficiency in the use of the languages spoken by several native tribes. He brought a cargo of ebony wood to the United States in 1852, and soon after published a work relating to the Gaboon country. Returning to Africa in 1855, he spent four years exploring the unknown regions near the Equator, and in the meantime shot and stuffed various birds and animals. In 1859 he brought a large collection of specimens and African weapons to New York City, where they were sold at good prices. While on an African voyage in 1863-65 he discovered the pigmies, a race of peculiar beings since met with and described by various explorers. After returning to America, he devoted his attention to lecturing and the publication of books relating to his travels. Among his publications are "Explorations and Adventures in Equatorial Africa," "A Visit to Ashango," "Lost in the Jungle," "Stories of the Gorilla Country," and "Country of the Dwarfs." Later he made a visit to Finland, Lapland and Norway, and published "The Land of the Midnight Sun."

DUCK, the common name of a large family of widely distributed web-footed birds. They include many species and are met more or less in all portions of the inhabited world. Many ducks are migratory, going to higher latitudes to breed in the summer season. They deposit from six to twelve eggs in a nest built among the reeds near the edge of bodies of fresh water, or in the hollows of trees or crevices of rocks. Ducks are peculiarly awkward in walking, having a waddling movement, but their flight is brisk and their ability to swim is quite highly developed. The wild species are classed as sea ducks and true ducks. Ducks of the former class are migratory, being seen frequently in large flocks moving to and from the higher latitudes. The most common wild duck of Central North America in the primeval period was the *mallard*, a fine game bird, and it is still found in many regions. The female is of a grayish color, while the male has an attractive plumage. In the latter the head is bluish-green, the neck is chestnut colored with a fine ring of white, and the body is finely marked in various light, blue, and greenish shades. In the duck family the bill is large, though it is greatly diversified as to size and shape. Some are flat and rounded at the top, others are quite sharp, while the *scaup duck* has a spoon-shaped bill. The *pintail* is characterized by a pointed tail. The flesh of ducks is a wholesome and favorite food and is much sought at all times, except in the season of breeding. Domestic ducks have been developed from the wild species, probably largely from the *wood duck* and the *mallard*. They are grown extensively for the flesh and feathers. The eggs, though excellent food, are not as well liked as hens' eggs. Besides, ducks do not produce eggs abundantly. The *musk duck*, a native of South America, often erroneously called *Muscovy duck*, is almost as large as a goose and is the largest of the duck family. The drake or male of all domestic ducks and of many wild species is distinguished by marked differences in plumage, is somewhat larger than the female, and has four curved tail feathers. Its voice is low and basslike and quite different from the quack of the female.



MALLARD DUCK—MALE AND FEMALE.

DUCKBILL, or **Water Mole**, an aquatic egg-laying animal, the only living species of the order *Monotremata*. It is native to Australia and the adjacent islands, including Papua and Tasmania. The body is about twenty inches long, which includes the bill and tail, and is thickly covered with a brown fur. The head is small, the teeth are near the base of each mandible, and the males have spurs on the hind legs. This animal has a horny bill similar to that of a duck, but it breathes through nostrils at the tip of the bill. Though an aquatic animal, it can climb trees with facility, and is able to dig long burrows with its feet. The fore feet are strong and have five toes, and the hind feet are smaller and the five toes are armed with claws. It feeds chiefly on worms and insects and prefers to live in large colonies. Reproduction is by eggs, which are covered with a soft and flexible shell, and only a few are laid at a time. At birth the young are blind and naked, but grow rapidly, subsisting on milk drawn from the milk glands of the mother. The duckbill has a gentle disposition and its voice resembles that of a young dog.

DUCKING STOOL, a kind of stool used for punishing scolds, especially scolding wives. It came into common use in many European countries in the 15th century, and was employed as an apparatus for inflicting punishment in Europe and America until the beginning of the 18th century. Many forms of ducking stools were in use, but the most common kind consisted of a mechanical arrangement whereby the culprit was fastened in the chair and moved up and down in the water, the head alone remaining above the surface, though it was sometimes submerged momentarily. Addison speaks of its use by saying, "Reclaim the obstinate and virulent woman, and make the ducking stool more useful."

DUCKWEED, the name of a small plant that floats upon the water, the rootlets hanging loosely beneath. It consists chiefly of flat green fronds and is found widely distributed on the surface of stagnant waters. The flowers are unisexual, destitute of calyx and corolla, and the fruit is rarely seen, since it propagates chiefly by new fronds budding from those already developed.

DUCTILITY (dŭk-tĭl'ĭ-tў), the quality of some substances by which they may be drawn into wire. Soft metals possessing only slight ductility cannot be drawn into wire, but may be converted into that form by a process of squirting or pressing. The degree of ductility in the important metals is in this order: gold, silver, platinum, iron, copper, zinc, tin, lead, and nickel. These metals are malleable, that is, they may be beaten into leaves or sheets, but in a relatively different order, as follows: gold, silver, copper, tin, platinum, lead, zinc, iron, and nickel.

DUDEVANT (dü-d'-vän'). See **Sand, George.**

DUDLEY (dŭd'lĭ), **Joseph,** jurist and governor, born at Roxbury, Mass., Sept. 23, 1647; died April 2, 1720. He graduated at Harvard in 1665, studied law and theology, and was a magistrate in Roxbury in 1673. Two years later he negotiated a treaty with the Narragansett Indians. He went to England on behalf of the colonists in 1682 and again in 1693, and was appointed to high offices in New York and New England. He was chief justice of New York from 1690 until 1693, and in 1702 became governor of the colony of Massachusetts, serving until 1715.

DUDLEY, Robert. See **Leicester.**

DUDLEY, Thomas, second colonial governor of Massachusetts, the father of Joseph Dudley, born in Northampton, England, in 1576; died July 31, 1653. He served in the army of Queen Elizabeth and in 1630 went to the Massachusetts Bay Colony as deputy governor under Winthrop, serving thirteen years in that office. Four times he was chosen governor of the colony, in the years 1634, 1640, 1645, and 1650. He founded Newtown, now Cambridge, Mass., and aided in establishing Harvard College. He was twice elected president of the New England Confederation, and was a leader of the party that advocated greater liberty for the colonies.

DUEL (dū'ĕl), a word derived from the Latin *duellum,* signifying a premeditated and prearranged mortal combat between two persons for the purpose of deciding some point of difference, or establishing some question of honor. Dueling was practiced in early ages and is referred to by some writers as a trial by battle. In a modern duel at least four persons are required to be present, including the two *combatants* or *principals* and a *second* for each principal. The seconds arrange the time, place, and mode of fighting the duel, though the choice of arms belongs exclusively to the person receiving the challenge. In former times it was thought a mark of honor to resent an insult by issuing a challenge, but modern public opinion has rendered dueling cowardly and disgraceful and has caused it to become almost obsolete. However, the practice is still regarded as honorable in some countries, particularly in the Latin states of Europe and some countries of Asia.

It is thought that the practice of dueling in modern Europe was the outgrowth of the custom of wearing a sword, and was most common in the 16th century. In many countries, particularly in France, challenges were issued on the most trivial and commonplace grievances, and the practice still occurs among students in the German army and some of the universities. In the reign of Henry IV. of France the number of persons falling in duels is estimated at fully 6,000. Sully, minister of Henry IV., opposed the practice with much energy, but the king favored it, because he thought it tended to maintain a spirit of militarism among the people. A decree was issued against it in 1602, but with little effect. More than 4,000 nobles lost their lives during the minority of Louis XIV. From France the practice was carried to England in the reign of James I., where it became quite common. Among the well-known men who fought duels in England are included William Pitt and the Duke of Wellington. The most celebrated duel occurring in America was the mortal combat between Alexander Hamilton and Aaron Burr, in which the former was slain. Great indignation was aroused among the people in the United States on account of the death of Hamilton, and the practice grew less common. It is now looked upon as a foolish and inhuman act to issue a challenge.

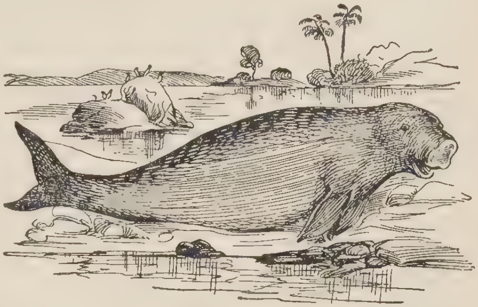
DUERO, or **Douro.** See **Douro.**

DUFF, Alexander, missionary, born in Perthshire, Scotland, April 26, 1806; died in Edinburgh, Feb. 12, 1878. He was sent to India in 1839 as the first missionary of the Scottish Presbyterian Church. His voyage was endangered by two shipwrecks, but he reached India safely in the spring of 1830, and entered upon effective work in religious instruction among the natives. A school founded by him in Calcutta soon grew to importance, receiving friendly support from several sources, and was attended by many students. He returned to Scotland for a short period on account of ill health, but soon after continued his aggressive work in the missionary field. After the religious disputes of 1843 he joined the Free Church party of the Church of Scotland and discontinued his college work. In 1844 the Calcutta *Review* was founded by his assistance. Five years later he returned to Scotland and subsequently made a successful missionary tour in America. Returning to India, he assisted in founding the University of Calcutta, and in 1863 returned to his home, where he became professor of New College, Edinburgh, in which he taught until his death. His extensive knowledge of the public affairs of India made him an important factor, both in religious work and in general culture. The educational work instituted by him in connection with religious teachings has been the basis of the most important movement in this line in India, and is still bearing important and wholesome results.

DUFFERIN AND AVA (dŭf'fẽr-ĭn ä'vȧ), **Frederick Temple Hamilton Blackwood, Marquis of,** British statesman, born at Florence, Italy, June 21, 1826; died Feb. 12, 1902. He descended from a distinguished family, was educated at Eton and Oxford University, and succeeded to the title of Baron Dufferin in 1841, while still in his minority. In 1850 he was created an English baron and served as lord-in-waiting to Queen Victoria for several years. Paying a visit to the south of Ireland during the famine of 1846-47, he wrote a work entitled "Irish Emigration and the Tenure of Land in Ireland." He made a voyage to Iceland in 1853 and shortly after published his "Letters from High Altitudes." From 1860 to 1872 he was prominent in the ministry, and in the latter year was appointed Governor General of Canada, in which position he served six years. In 1879 he was chosen ambassador to Saint Petersburg, in 1881 was transferred to the embassy at Constantinople, and in 1884 was appointed Viceroy of India. He became ambassador at Rome in 1888, was created Marquis of Dufferin and Ava, and was transferred to Paris in 1891, from which embassy he retired in 1896, thus terminating his diplomatic career. On account of eminent scholarship he was the recipient of many distinguished honors. His "Speeches and Addresses" was published in London in 1882, and eight years later his "Speeches in India" appeared. Among the British statesmen and diplomats of the last century he takes high rank.

DUFFY (dŭf'fĭ), **Charles Gavan,** author and statesman, born in Monaghan County, Ireland, in 1816; died in 1903. He engaged in journalism at an early age and founded the *Nation* in Dublin, which was made the organ of the younger element in Irish politics. This publication was afterward reorganized under the name of *The Irish Confederation,* and in 1848 he was tried for treason felony and acquitted. He went to Australia in 1856 to engage in the practice of law at Melbourne, and the following year was made minister of public works in Victoria. Subsequently he entered the Parliament of Victoria, and in 1871 was Prime Minister and was knighted. He returned to Europe in 1880 and took up his residence in France. "Ballad Poetry of Ireland" is his most popular work, and has passed through fifty editions. Other writings are "Four Years of Irish History," "Young Ireland," and "Conversations with Carlyle."

DUGONG (du̦-gŏng'), an herb-eating sea mammal of the genus *Halicore.* Cuvier classed it with his order of *Pachydermata,* which includes the rhinosceros and other thick-skinned animals, but the order is not recognized at present. The eyes are small, the upper lip is thick and fleshy, and the upper jaw bends downward almost at a right angle. It has a whitish color below and a slate-brown or bluish-black above. The common length is eight or ten feet, though some are twenty feet long. It is widely distributed in tropical seas, but is most common in the waters of Southern Asia and the East Indies. Its food is marine vegetation, principally algae, which it finds in shallows or at the river estuaries. The natives pursue it for its flesh, which resembles the beef of young cattle and is highly nutritious. The mother has a feeble voice and shows intense affection for her young.



DUGONG.

DU GUESCLIN (dü gȧ-klăn'), **Bertrand,** constable of France, born near Dinans, in Brittany, about 1320; died July 13, 1380. He entered the military service in 1342 under Charles of Blois, and was an important factor in expelling the English from many parts of France. In 1356 he defeated the Duke of Lancaster at Rennes, but was taken prisoner by the English under the Black Prince in 1367. He was released on the payment of a large ransom and became constable of France in 1369, and expelled the English from nearly every province in France before 1375.

DÜHRING (dü'rĭng), **Eugen Karl,** philosopher, born in Berlin, Germany, Jan. 12, 1833; died in 1921. He was educated at Berlin and practiced law, but was compelled to abandon his profession, owing to an affection of the eye, and eventually he became totally blind. From 1864 to 1877 he lectured on philosophy and political economy at the University of Berlin, from which position he resigned in the latter year and gave his attention exclusively to economical and philosophical subjects. Both in writing and in teaching he was unduly personal and somewhat materialistic, and was opposed to the theory of pessimism and the doctrine of Kant that the categories of time and space have only subjective validity. Some of his writings have been widely translated and have had general circulation. They include "The Worth of Life," "Theory of Logic and Knowledge," "Critical History of the General Principles of Mechanics," "Critical History of Philosophy," "Capital and Labor," and "Theory and Logic of the Sciences."

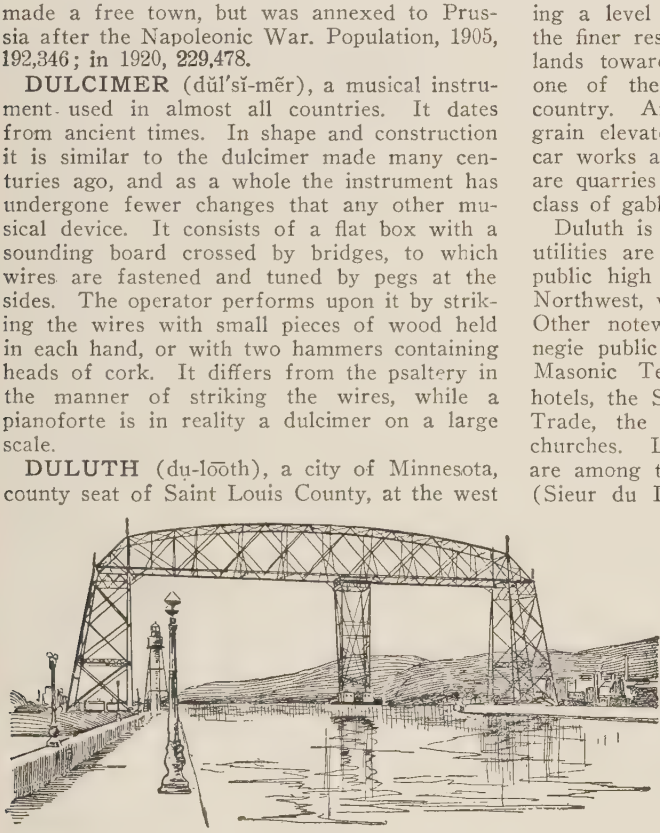
DUISBURG (dōō'ĭs-bu̦rk), a city of Germany, in Rhenish Prussia, fifteen miles north of Düsseldorf. It is finely located between the Ruhr and the Rhine, with which it is connected by canals, and is the converging center of several railroads. The noteworthy buildings include the Church of Saint Salvator, the town hall, the public library, and a number of gymnasiums and *Realschulen.* The streets are straight and well improved with modern utilities, such as electric street railways, waterworks, sewerage and stone and asphalt pavements. It has manufactures of steel and brass wares, glue, tobacco, beet sugar, soap, furniture, chemicals, and machinery. In the vicinity are extensive coal mines and stone quarries. It has a large shipping trade in grain, coal, iron ore, and merchandise. Duisburg is an ancient town, but its larger growth is comparatively recent. Charlemagne fortified it and in the 13th century it became a member of the Hanseatic League. Subsequently it was made a free town, but was annexed to Prussia after the Napoleonic War. Population, 1905, 192,346; in 1920, 229,478.

DULCIMER (dŭl'sĭ-mẽr), a musical instrument used in almost all countries. It dates from ancient times. In shape and construction it is similar to the dulcimer made many centuries ago, and as a whole the instrument has undergone fewer changes that any other musical device. It consists of a flat box with a sounding board crossed by bridges, to which wires are fastened and tuned by pegs at the sides. The operator performs upon it by striking the wires with small pieces of wood held in each hand, or with two hammers containing heads of cork. It differs from the psaltery in the manner of striking the wires, while a pianoforte is in reality a dulcimer on a large scale.

DULUTH (dụ-lo͞oth), a city of Minnesota, county seat of Saint Louis County, at the west end of Lake Superior. It is on the Northern Pacific, the Great Northern, the Chicago and Northwestern, the Duluth, South Shore and Atlantic, the Soo, the Milwaukee, and other railroads. Being situated at the western extremity of navigation on the Great Lakes, opposite Superior, Wis., it is highly important as a wholesaling and distributing center. The harbor is nine miles long and two miles wide, and is protected by a narrow strip of land called Minnesota Point, which forms a natural breakwater and is cut by ship canals, through which large vessels pass. The largest of these canals, which is located near the city, is crossed by the celebrated aërial ferry. It is the only structure of the kind in America and has the advantage of leaving the canal clear, carrying pedestrians, vehicles, and merchandise at regular intervals. The United States government has expended large sums in dredging and otherwise improving the harbor for heavy shipping.

The city occupies a fine site overlooking the lake. It stretches along the lake shore a distance of about thirty miles, and Superior Street, the principal thoroughfare, extends nearly parallel to the shore the entire distance. The ground rises rapidly from the margin of the water. The business section is near the lake, occupying a level and slightly elevated tract, while the finer residential sections are in the higher lands toward the north and northeast. It is one of the leading shipping points in the country. Among the industries are sawmills, grain elevators, machine shops, flouring mills, car works and blast furnaces. In the vicinity are quarries of sandstone, granite, and a high class of gabbro.

Duluth is generally well built and the public utilities are modern and well managed. The public high school, one of the finest in the Northwest, was erected at a cost of $1,000,000. Other noteworthy buildings include the Carnegie public library, the Federal building, the Masonic Temple, the Spalding and Duluth hotels, the State Normal school, the Board of Trade, the Lyceum theater, and many fine churches. Lincoln, Chester and Grand View are among the public parks. Daniel Gresolon (Sieur du Lhut), after whom it was named, visited the place in 1680, but it was not settled until in 1853. It became a town in 1867, and was chartered as a city in 1870. The growth of the city from 1880 to 1900 is one of the most remarkable in the United States, the population of the former year being 3,843, while in 1900 it was 52,969. Population, 1920, 98,917.



AËRIAL FERRY AT DULUTH, MINN.

DUMA, or **Douma**, the lower branch of the legislative department of Russia, established by an imperial manifesto on Oct. 19, 1905, and frequently referred to as the National Assembly. It is composed of about 500 members, who are elected by the Zemstvos, and has joint legislative power with the Council of the Empire, but bills passed by both these branches are subject to veto by the emperor, and cannot be introduced the second time without the royal consent. Among the restrictions upon the duma are that it cannot take part in legislation regarding titles of nobility or entailed estates. Neither can it discuss the reports of the Minister of Finance, or consider charges of malfeasance against members of the council or officers of the government.

DUMAS (dü-mȧ'), **Alexandre Davy,** noted novelist, born in Villers-Cotterets, France, July 24, 1802; died Dec. 5, 1870. He was brought up in a French country town, and at the age of twenty-one proceeded to Paris to seek his fortune. Almost reduced to poverty, he ultimately secured a clerkship and later began to write plays. His "Henry III." soon became popular in Paris and gained a reputation. Entering upon a tour of Switzerland, he contributed reports of the journey to a magazine, by means of which he became well known, and subsequently his "The Count of Monte Cristo," made his acquaintance world wide. Soon after he published "Three Musketeers," which proved no less popular than "The Count of Monte Cristo," the two arousing interest equal to "Robinson Crusoe" and Scott's "Waverly." Later he undertook story writing, for which purpose he employed assistants and published several works as his own productions. His life was characterized by various extensive schemes, one of which was joining the army under Garibaldi in 1860, through which his fortune was lost and he became penniless. During the time of his prosperity he made more than $50,000 a year by writing, but at the time of his death he had scarcely greater means than when he started on his work in Paris as a young man. Among his general writings are "The Black Tulip," "Twenty Years After," and "Margaret of Anjou."

DUMAS, Alexandre, son of Alexandre Davy Dumas, novelist, born in Paris, France, July 28, 1824; died Nov. 27, 1895. He was educated at the College Bourbon, receiving much assistance for his literary work from his father. His early life was spent largely in company with actors and literary people, through whom he acquired an interest in literature, and his work of writing poetry and sketches began at an early age. He published his first book in 1840 and produced a popular drama four years later. Publishing several successful comedies, he was installed as a member of the French academy in 1875, and was made grand officer of the Legion of Honor in 1894. Among his best known writings are "La Traviata," "De Fils Naturel," "Francillon," and "Monsieur Alphonse."

DU MAURIER (dü mō-ryȧ′), **George Louis Parmella Busson,** caricaturist and author, born in Paris, France, March 6, 1834; died in London, Oct. 8, 1896. He was liberally educated, studying chiefly in Paris, and adopted art as a profession. His first employment was that of illustrating sketches for several London periodicals, including *Once a Week* and *The Cornhill Magazine,* and later he became a member of the staff of *Punch,* in which many of his sketches of social life appeared. He published a series of essays on his art in *Punch* in 1890, and prepared illustrations for Thackeray's "Henry Esmond" and Jerrold's "The Story of a Feather." As a writer his fame was made in 1891 by publishing "Peter Ibbetson," and it was greatly extended in 1894 by his publication of "Trilby." The latter appeared as a serial in *Harper's Magazine,* but its height of popularity was not reached in America until it appeared in book form. Soon after it was dramatized and placed with considerable success on the stage in many important cities. In 1896 "The Martian" and numerous contributions to *Punch* were published. His finest productions in art are the illustrations of Thackeray's works, and his most popular writing is "Trilby."

DUMBARTON (dŭm-bär′tŭn), a seaport and the capital of Dumbartonshire, Scotland, thirteen miles northwest of Glasgow. It is situated on the Leven River, near its entrance into the Clyde, and has transportation facilities by steamboats and railways. The castle of Dumbarton, located at the mouth of the Leven, stands on a basaltic rock which rises about 560 feet. This castle is maintained by the government under the treaty of union between England and Scotland, whose terms require that it and three other Scotch castles be kept in repair. Sir William Wallace, the Scotch hero, was for a time imprisoned in the castle. It was a residence of Mary, Queen of Scots, before she went to France. Dumbarton has extensive shipyards, iron foundries, cordage works, and machine shops, and is the center of considerable trade in merchandise and produce. Population, 1922, 20,864.

DUMFRIES (dŭm-frēs′), a river port and the capital of Dumfrieshire, Scotland, 72 miles southwest of Edinburgh. It is situated on the Nith River, nine miles from its entrance into the Solway Firth, and has convenient railroad facilities. The chief buildings include the post office, an infirmary, the Crichton Institution, and a number of fine schools and churches. Among the manufactures are hosiery, baskets, clothing, leather, and boots and shoes. Dumfries is noted for its early history. In 1306 Robert the Bruce slew the Red Comyn in the Greyfriars' Monastery, which was built by Devorgilla, the mother of John Baliol. Robert Burns, the poet, is buried in the Saint Michael's churchyard. The Young Pretender made Dumfries his headquarters in 1745. Population, 1922, 20,150.

DUMOURIEZ (dü-mo͞o-ryȧ′), **Charles François,** famous general, born in Cambrai, France, Jan. 25, 1739; died March 14, 1823. He descended from a respectable family, secured a good education, and attached himself to the army, serving with distinction during the Seven Years' War. In 1768 he became quartermaster general of a small army in Corsica, with which the conquest of that island was undertaken, and afterward he was made a colonel for faithful service. He was appointed governor of Cherbourg in 1778, and, when the Revolution broke out, he joined the popular party, becoming minister of foreign affairs in 1792. At the beginning of the war between France and Austria he took a command in the army, succeeded in an invasion of Flanders, and conquered Belgium. His loyalty to the revolutionary government was mistrusted, and soon after he became allied with the party favoring a constitutional monarchy, and he was compelled to flee when attacked by the Versailles volunteers on March 4, 1793. A price was set upon his head by the convention, but he escaped by giving himself up to the Austrian government, and later settled as an exile in England. He published his "Memoirs" in 1794, which he wrote himself, and published an enlarged edition in 1822. Dumouriez remained in exile until the time of his death.

DÜNA (dü′nȧ), or **Southern Dwina,** an important river of western Russia, rises in the Valdai Hills, flows toward the southwest, and thence makes a bold curve toward the northwest and discharges into the Gulf of Riga. The entire course is about 650 miles, of which a large part is navigable, except four months of the year, when it is frozen. Canals connect it with the Black and Caspian seas, the Gulf of Finland, and other navigation centers. The course of the Düna is through a fertile and densely populated region and its importance in commerce is marked, having Jacobstadt, Riga, and Friedrichstadt on its banks.

DÜNABURG (dü′nȧ-bo͞ork), or **Dvinsk,** a fortified city of Russia, in the government of Vitebsk, 110 miles southeast of Riga. It is situated on the Düna River and on the trunk railway from Warsaw to Saint Petersburg. The surrounding country is fertile. Among the manufactures are flour, matches, clothing, machinery, tobacco, and spirituous liquors. It has a large trade in produce and merchandise. The streets are well paved. It was bombarded by the French in 1812 and by the Germans in 1915 and 1916. Population, 1922, 112,783.

DUNBAR (dŭn′bär), **Paul Lawrence,** negro poet, born at Dayton, Ohio, in 1872; died Feb. 9, 1906. He graduated at the high school in Dayton and for a time worked on newspapers in New York City. In the meantime he began to write poems and appeared successfully as a public reader. W. D. Howells and others commended his writings on account of the genius displayed in the dialect and the humor characteristic of negro life. His writings include "Lyrics of Lowly Life," "Oak and Ivy Poems," "Lyrics of Love and Laughter," "Heart of Happy Hollows," "Lyrics of Sunshine and Shadow," and "Poems of Cabin and Field."

DUNBAR, William, Scottish poet, born at Salton, Scotland, about 1460; died about 1520. He joined the Order of Franciscans and traveled as a friar and itinerant preacher in his youth. In 1500 he was employed as clerk of embassy by James IV of Scotland. He possessed a variety of poetic gifts and many regard him the greatest of the Scottish poets. His writings include "The Thistle and the Rose," written in honor of the marriage of James IV. to Margaret of England, "The Dance of the Seven Deadly Sins," and "The Two Married Women and the Widow."

DUNDEE (dŭn-dē′), the fourth city of Scotland, in Forfarshire, fifty miles northeast of Edinburgh. It is situated on the Firth of Tay, about ten miles from its entrance to the sea, and is the center of a large railroad and navigation commerce. The streets are regular in most of the city and are well paved and lighted, and many are traversed by electric street railway lines. It has a safe harbor and extensive dockyards. Among the manufactures are textile goods, clothing, confectionery, earthenware, and machinery. It is the seat of extensive warehouses, flouring mills, and machine shops. The northern seal and whale fishery interests make it an important depot for operation, thus adding largely to its commercial importance. Among the noteworthy buildings are the Saint Paul's Episcopal Church, the post office, the county courthouse, the Kannaird hall, and the University College. In 1887 the large bridge, about two miles long, over the Tay, was blown down while a passenger train was passing over. The Firth is crossed farther up at present by a bridge 3,600 yards long. Dundee was besieged and sacked by the Duke of Montrose in 1645, and was stormed by General Monk about six years afterward. Its history in connection with Great Britain is quite interesting. Population, 1921, 165,006.

DUNE (dūn), the name first given to the hills of sand along the coast which are blown together by the winds, but later applied to sandhills formed similarly in regions of sandy or arid soil. Dunes begin to form where the sand is blown against some obstruction, such as a log or boulder, and from this beginning low hills are built up gradually. They are common on the sandy Atlantic coast of North America from Cape Cod to Cape Canaveral, where they are frequently from ten to thirty feet high, and on the coasts of the Bahamas they have a height of more than a hundred feet. In France, in the department of Landes, the dunes cover a large area and encroach farther upon the land each year. Others are found among the cliffs of England, near the southern end of Lake Michigan, and in extensive areas of the Sahara.

DUNEDIN (dŭn-ē′dĭn), a city of New Zealand, capital of the provincial district of Otago, on the east side of South Island. It is conveniently located at the head of Otago harbor, and has a large interior and domestic trade. A railway connects it with the principal cities of the island, and steamboats run regularly between it and Melbourne. It is the seat of Otago University, opened in 1871, and has street railways, waterworks, a public library, a fine post office, and several handsome government buildings. The streets are regularly platted and well paved with brick and stone. Among the manufactures are clothing, brick, pottery, utensils, and woolen goods. The first settlement on its site was made in 1848, but its prosperity dates from 1861, when extensive gold fields were discovered in the vicinity. Population, 1921, 63,150.

DUNFERMLINE (dŭn-fĕrm′lĭn), a city of Scotland, in the western part of Fifeshire, sixteen miles northwest of Edinburgh. It has railroad and electric railway facilities. The manufactures include cotton and linen goods, ironware, pottery, clothing, and machinery. Lime beds and iron collieries are worked in the vicinity. It has a Carnegie public library, a fine high school, a public hall, and several county and corporation buildings. Dunfermline was a favorite residence of the early Scottish kings and is the birthplace of David II. and Charles I. Malcolm Canmore founded a Benedictine abbey here about 1075. The remains of Robert Bruce are beneath the pulpit of the Abbey Church. Population, 1906, 26,352; in 1921, 28,103.

DUNGLISON (dŭng′glĭ-sŭn), **Robley,** American physician, born in Keswick, England, Jan. 4, 1798; died in Philadelphia, Pa., April 1, 1869. In 1824 he emigrated to the United States, and served as professor of medicine in the University of Virginia until 1833. In 1833-36 he officiated as professor of medicine in the University of Maryland, and afterward occupied a chair in Jefferson Medical College, Philadelphia, for more than thirty years. Besides making numerous translations, he wrote "Dictionary of Medical Science" and "The Practice of Medicine."

DUNKARDS (dŭn̲′kĕrdz), a name derived from the German word *Tunkers,* meaning immersers, and by which a Protestant denomination is known. The society of Dunkards was founded at Schwartzenau, Germany, in 1708. It includes the Conservative, Old Order, and Progressive Baptists, and the German Seventh-Day Baptists. The entire Dunkard denomination comprises 1,095 churches, 2,885 ministers, and 118,875 members. It has the largest number of adherents in Ohio, Pennsylvania, Indiana, and the states in the Northwest. The publishing headquarters are at Elgin, Ill. Several colleges and seminaries are maintained. The bicentennial of the Progressive Baptists was held at Des Moines, Iowa, in 1908, when the society was renamed Church of the Brethren.

DUNKIRK (dŭn′kĕrk), a city and port of entry of Chautauqua County, New York, on Lake Erie, about 35 miles southwest of Buffalo. It is on the Erie, the New York Central, the Lake Shore and Michigan Southern, and other railroads. The noteworthy buildings include the public library, the high school, the Brooks Memorial Hospital, and the city hall. Many of the streets are paved and improved by grading and parkings. It was settled in 1809 and incorporated in 1837. Among the manufactures are glass, machinery, locomotives, clothing, lumber, utensils, and hardware. Population, 1905, 15,251; in 1920, 19,336; in 1925, 19,912.

DUNKIRK, or **Dunkerque,** a seaport in France, on the Strait of Dover, in the department of Le Nord. It is defended by forts and outworks, and surrounded by walls. The harbor is large and convenient. Among the manufactures are cordage, sugar, spirituous beverages, leather, soap, and machinery. Shipbuilding is an important industry. The railroad and electric car line connections are extensive. Among the public buildings are a library, the Church of Saint Eloi, the museum, and the town hall. Dunkirk owes its early growth to the church built by Saint Eloi in the 7th century. It has been attacked in many wars upon France, including the assaults of the English under the Duke of York, which was defeated. The Germans inflicted heavy losses by bombardments in 1914 and 1915. Population 1922, 40,210.

DUNMORE (dŭn-mōr′), a borough of Lackawanna County, Pennsylvania, on the Erie and the Lackawanna railroads. Extensive anthracite coal and clay deposits are worked in the vicinity. It is the seat of the State Oral School. Among the industries are steel and iron mills, stone works, feed mills, and implement works. It has gas and electric lighting, electric street railways, and municipal waterworks. The place was settled in 1835 and incorporated in 1862. Population, 1920, 20,280.

DUNMORE, John Murray, Earl, royal Governor of New York, born in England in 1732; died in 1809. He descended from the Stuarts, succeeded to the peerage in 1766, and became Governor of New York in 1770 and of Virginia the following year. His unjust rule led to an uprising under Patrick Henry, causing him to flee for safety in 1775. During the early part of the Revolution he conducted a petty warfare against the colonists, but returned to England in 1776. He was made Governor of the Bahamas in 1787, serving in that office until 1796.

DUNNE (dŭn), **Edward F.** See **Municipal Ownership.**

DUNNE, Finley Peter, humorist, born in Chicago, Ill., July 10, 1867. After obtaining a common school education in Chicago, he engaged as reporter for various newspapers, which line of work he followed in 1885-91. In the latter year he became editor of the *Times,* in 1892 engaged as a member of the staff of the *Evening Post* and of the *Times-Herald,* and in 1897 became editor in chief of the *Evening Journal.* While working on the staff of the *Times-Herald* he attracted considerable attention by publishing sketches in the name of Martin Dooley, publican of Archey Road, which were afterward issued in classified volumes. His treatment of news items in connection with the Spanish-American War was particularly popular. In ability to analyze fault and criticise foible humorously he has rarely been excelled. Among his publications are "Mr. Dooley in the Hearts of His Countrymen," "Mr. Dooley in Peace and in

War," "Mr. Dooley's Opinions," and "Mr. Dooley's Philosophy."

DUNS, John, or **Duns Scotus,** eminent minister, born in 1265; died in Cologne, France, in 1308. The locality of his birth is not known and it is not certain whether his birth took place in 1265. He studied at Oxford University, where he afterward became professor of theology, and was an active member of the Order of Franciscans. He had a long controversy upon the relation of human perception of real objects with Thomas Aquinas, and later upon various religious doctrines, and the disciples of these men became known respectively as Scotists and Tomists. The reasoning of Duns was to the effect that the knowledge derived from human conception and experience is real and trustworthy, since the fundamental ideas upon which human knowledge rests are identical with the absolute substance of existing objects. He held that philosophy is intended to show the conformity of the teachings of the Bible with those of reason. He opposed the Dominicans in defending the doctrine of the Immaculate Conception, which was declared a fundamental doctrine of the Catholic faith in 1854. His writings include commentaries on the Bible and on Aristotle, and he published a work generally known as "Commentary on the Sentences of Peter Lombard."

DUNSTAN (dŭn′sta̮n), **Saint,** Archbishop of Canterbury, born in Glastonbury, England, in 925 A. D.; died May 19, 988. He was of noble birth, being distantly related to the royal family and connected through influential relatives with the church. Most of his early history is uncertain, though it is known that he was a composer of music and skillful in playing upon various instruments. He appears to have worked with considerable skill as a jeweler, blacksmith, and calligrapher. It is said of him that he had his workshop, bedchamber, and oratory in a small room. According to legends, he was confronted by the devil while employed at the forge and was tempted by immoral propositions. Being greatly annoyed by these temptations, he thrust his tongs into the fire, and, when at a white heat, seized the fiend by the nose and caused his clamor of agony to resound through the entire neighborhood. After being educated at the abbey of his native town, he became a monk and was shown much favor by King Edmund. The saint distinguished himself as an adviser of the king, on account of which Edmund became a noted statesman.

When Edwy succeeded to the throne, in 955, Dunstan lost public favor, but he regained it when Edgar became the ruler of the country north of the Thames. The latter became king of the whole country after the death of Edwy and made Dunstan Archbishop of Canterbury. Having a potent influence over King Edgar, his reign became known as the most peaceful, prosperous, and successful in early English history. By a wise policy the Danes and English united under one dominion and the clergy was improved. All divines were induced to become real teachers of the people, and by a wise system promulgated knowledge and interest in the sciences and arts. The coinage of money was largely reformed and dangerous wild animals in the mountains were extirpated. King Edgar supported his ambitions to extend celibacy among the clergy by establishing and maintaining the strict rule of Benedictine monasteries. With the death of Edgar the influence and credit of the monk rapidly declined and his life was ended in great grief and vexation.

DUPLEIX (dü-plâ′), **Joseph François,** soldier and statesman, born in Landrecies, France, Jan. 1, 1697; died Nov. 10, 1764. He was appointed to a seat in the council of Pondicherry in 1720, and soon after attained promotion to other important positions. His administration of public affairs in India was so eminently successful that the British became alarmed and a war broke out between England and France. Being popular and progressive, both in government and military management, he became ambitious to found a French empire in India on the ruins of the Mongol monarchy. He soon assumed control of affairs in Central India, made himself master of Hyderabad, and became the controlling influence in the Carnatic. A severe struggle between the English and French continued until 1754, when he was recalled. If he had succeeded in securing the hearty support of the French Company, it is likely that India would still be a French possession. The fortunes of war were so strongly against him in the latter part of his life that he died in poverty and neglect.

DUPONT (du-pŏnt′), **Samuel Francis,** naval officer, born at Bergen Point, N. J., Sept. 27, 1803; died in Philadelphia, Pa., June 23, 1865. He entered the navy as a midshipman at the early age of twelve years, was promoted successively, and retired from the navy in 1863 with the rank of rear admiral. He served with distinction in the Mexican War and took a prominent part in the first three years of the Civil War. In the latter he commanded the South Atlantic squadron. A treatise on the use of floating batteries for coast defenses was published by him. This work is still valued highly as an authority.

DÜPPEL (düp′pe̮l), a village of Germany, in the Prussian province of Schleswig-Holstein, sixteen miles northeast of Flensburg. It is located on the coast of the Little Belt, is strongly fortified, and has importance as a strategic point. In the war between Prussia and Denmark, in 1849, it was stormed and captured by the Germans. A second engagement took place at Düppel in 1864, when the Germans bombarded the Danish position and captured it after a siege of two months.

DUPRÉ (du-prā′), **Jules,** noted painter, born in Nantes, France, in 1812; died in Paris, Oct. 6, 1889. He was self-educated in the arts, and first attracted attention by exhibiting five landscapes at the salon in 1831. Critics of his time accorded him the highest rank as a portrayer of field life. Among his best productions are "The Sluice," "The Return of the Flock," "The Landscape," 'The Interior of a Courtyard," and the "Valley of Montmorency."

DUPUY (du̥-pwẽ'), **Charles Alexandre,** statesman, born in Le Puy, France, Nov. 5, 1851; died in 1923. He studied pedagogy and began a successful career as teacher. His eminently able work gave him high standing and led to his promotion as inspector of public instruction. In 1885 he was elected a deputy for Haute-Loire and was reëlected several terms. He served as minister of public instruction in the Ribot cabinet and was appointed minister of the interior by President Carnot in 1893. In the same year he was elected president of the chamber of deputies and soon after became premier. He was elected senator for the department of Haute-Loire in 1900. In politics his career shows a decided tendency to the republican party and opposition to the influence of the priests.

DUQUESNE (dü-kån'), a borough in Allegheny County, Pennsylvania, about ten miles southeast of Pittsburg, on the Monongahela River and on the Pennsylvania Railroad. The chief buildings include the high school and the Carnegie Library and Institute. It is an important manufacturing center and has a growing trade in coal and merchandise. The manufactures embrace ironware, brick, drugs, machinery, and steel products. It has modern municipal improvements, such as pavements and waterworks. Duquesne was settled in 1885 and incorporated in 1891. Population, 1920, 19,011.

DURAND (du-rănd'), **Asher Brown,** engraver and artist, born in Jefferson, N. J., Aug. 21, 1796; died Sept. 17, 1886. In 1812 he was apprenticed to an engraver, and became known throughout the United States by his "Declaration of Independence," which was a reproduction from Trumbull. In 1835 he turned his attention to painting. Many of his productions take high rank. He was president of the National Academy of Designs from 1845 to 1861. Among his best paintings are "The Capture of André," "The Wrath of Peter Stuyvesant," "The Trysting Tree," and "Harvey Birch and Washington."

DURANGO (dōō-rȧn̠'gō̇), a city of Mexico, capital of the state of Durango, 475 miles northwest of the city of Mexico. The city is well built on an elevation 6,845 feet above sea level, has manufactures of cotton and woolen fabrics, leather, and machinery, and is the seat of a government mint and a cathedral. It has several fine school and church buildings. Mining, agriculture, and stock raising are carried on in the vicinity. It has railroad connections and a considerable trade. Population, 1920, 34,085.

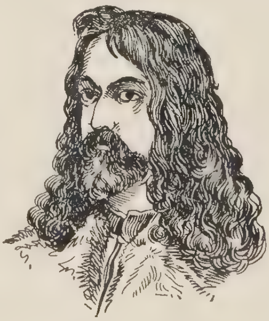
DURANGO, county seat of La Plata County, Colorado, on the Las Animas River and on the Rio Grande Southern and the Denver and Rio Grande railroads. It is surrounded by a fertile country, which yields large quantities of farm products and contains extensive oil and coal deposits. The noteworthy buildings include the high school, library, and courthouse. It has a considerable trade, and it is the seat of iron and steel works. Population, 1920, 4,116.

DURANT, county seat of Bryan County, Oklahoma, 120 miles southeast of Oklahoma City, on the Kansas City Southern and other railroads. It is surrounded by a fertile region and has paving, oil mills, machine shops, and flour mills. The city hall, high school, and several fine churches are among the features. It was settled in 1887. Population, 1920, 7,340.

DURANT (dû-rănt'), **Henry Fowle,** philanthropist, born at Hanover, N. H., Feb. 20, 1822; died Oct. 3, 1881. He graduated at Harvard University in 1841. He founded Wellesley College, at Wellesley, Mass., to which he gave nearly $2,000,000. Originally his name was Henry Welles Smith.

DURBAN (dûr-băn'), an important seaport of South Africa, the only port city of Natal, on the Bay of Natal. The bay has a lighthouse and is protected by fortifications. It has a public library, a museum, electric street railways, and a fine public park, and is the terminus of two railway lines. The domestic and export trade are important. It has manufactures of clothing, brick, utensils, and machinery. Durban was founded in 1823 by the Dutch. Population, 1921, 69,187.

DÜRER (dü'rẽr), **Albrecht,** engraver and artist, born in Nuremberg, Germany, May 30, 1471; died April 6, 1528. He was the son of a pious goldsmith, received a good education, and was instructed in the goldsmith trade. At the age of fifteen years he executed a production in chased silver representing the seven falls of Christ, in accord with the tradition that Christ fell seven times on his way to Mount Calvary while bearing the cross. Soon after he spent four years traveling in Germany and the Venetian states, studying the arts and industries. Later he began to design on wood and engrave on copper, many of his pieces still being extant. He made a second tour to Venice in 1505, where he painted a picture of the martyrdom of Saint Bartholomew and his famous "Adam and Eve," the latter being afterward purchased for the gallery of Prague. At Bologna he met with


ALBRECHT DÜRER.

Raphael, who esteemed him highly and exchanged portraits with him. After this journey he was appointed court painter by Emperor Maximilian.

Dürer visited the Netherlands in 1520, painted the portrait of Erasmus, and became court painter to Charles V. His productions were received with much enthusiasm, not only by the common people, but by the most eminent nobles and crowned heads of his time. His expenses were defrayed at the inns by his admirers, and he was conveyed free from city to city. He became a supporter of the doctrines of the Reformation, and greatly lamented when he was informed of Luther being carried off to the castle of Wartburg. The most celebrated of his copperplates are "Saint Jerome in his Study" and "The Smaller Passion." His woodcuts include "The Smaller Passion," "The Greater Passion," and "The Apocalypse." Much has been said and written of his remarkable genius. He is commonly known as the "Prince of Artists."

DURHAM (dŭr'ŭm), county seat of Durham County, North Carolina, 26 miles northwest of Raleigh. It is on the Seaboard Air Line, the Southern, and the Norfolk and Western railroads. Among the chief buildings are the county courthouse, the public library, the Watts Hospital, and Duke College. It is surrounded by an agricultural country and has a large trade in produce and merchandise. The manufactured products include tobacco, furniture, cotton and woolen goods, flour, ironware, machinery, and implements. Durham was settled in 1855 and incorporated in 1869. General Johnston surrendered with a Confederate army to General Sherman near the city in 1865. Population, 1900, 6,679; in 1920, 21,719.

DURHAM, a city of England, situated near the center of Durham County, on the Wear River. It occupies a site partly encircling a steep, rocky eminence, on the top of which are a castle and a cathedral. The ancient castle is now used by the university, which was founded in 1832 and incorporated by royal charter in 1837. Durham first became important in 995, when a church was located here to enshrine the tombs of Saint Cuthbert and others. The present cathedral was begun on the site of the old church in 1093, and constitutes one of the most characteristic specimens of Norman architecture. The main building has a length of 510 feet and the central tower is 214 feet high. The bishopric of Durham is celebrated for its efficient line of bishops, who exercised marked influence upon the religious aspect of Great Britain. Population, 1922, 15,382.

DURHAM, John George Lambton, statesman, born in London, England, April 12, 1792; died on the Isle of Wight, July 28, 1840. He studied at Eton and entered the army. In 1813 he was elected to Parliament as a Whig, but was later classed as an advanced Liberal, and in 1828 was created Lord Durham. He became Lord Privy Seal in the Cabinet of Earl Grey in 1830, and supported the reformed bill of 1831 in the House of Lords. In 1835 he was made ambassador to Russia and three years later became Governor General of Canada, where a rebellion was in progress, which he sought to overcome. The government disapproved of his measures and he returned to England in 1839. Durham fostered a liberal policy looking toward a union of Upper and Lower Canada, which he favored in a report of Canadian affairs submitted to the government.

DURYEA, Joseph Tuthill, clergyman and lecturer, born in Long Island, New York, Dec. 9, 1832; died in Boston, May 17, 1898. He was educated at Princeton College and Princeton Seminary, and was teacher of Greek at the former until 1859. Soon after he was called as minister by a Presbyterian congregation in Troy, N. Y., where he officiated three years, then went over to the Collegiate Reformed Dutch Church in 1862, but reunited with the Presbyterians in 1867. Later he secured much success in the ministry at Boston and Omaha, Neb., remaining in the latter city from 1888 to 1895, and returning again to Brooklyn as pastor of the First Reformed Church. He was well known as an eminent divine and a popular and successful lecturer.

DUSE (do͞o'zȧ), **Eleonora,** actress, born in Vigevano, Italy, in 1859; died April 21, 1924. In 1862 she began to appear on the stage and for some time earned her living as a strolling player. Her early appearances were not attended with a great degree of success, but in 1885 she was recognized at Naples as one of the leading actresses of Italy. In 1892 she made an international reputation by playing at Vienna, and the following year scored successes in New York and Boston. In 1897 she played in Paris and came to be looked upon as a rival of Sarah Bernhardt. Subsequently she toured the leading cities of Europe and America, playing with much success in the presentation of *Camille, Juliet, Fernande, Francesca da Rimini,* and *Paula* in "The Second Mrs. Tanqueray." She obtained success in several plays written for her by Gabriele d'Annunzio.

DÜSSELDORF (düs'sẹl-dŏrf), a city of Germany, in Rhenish Prussia, on the Rhine River, at the mouth of the Düssel. It has communication by lines of steamers, steam railroads, and electric railways, and is one of the leading commercial centers in the valley of the Rhine. Among its manufactures are carpets, tobacco, cotton and woolen goods, leather, ironware, chemicals, machinery, musical instruments, and objects of art. The cotton and iron industries are very extensive and merit special mention. It has a large export and jobbing trade.

Düsseldorf is noted as a center of art and education. The Academy of Art is one of the leading institutions of the kind in Europe. It was founded in 1767 and contains paintings by Rubens, Bellini, Dürer, Janssens and other famous artsts. Among the noteworthy buildings are the palace of justice, the Church of Saint Lambert, the museum, and a number of gymnasiums. Among the public parks may be mentioned the Hofgarten, one of the finest in Europe, and within it are several fine monuments, including the War Memorial erected in 1892 to commemorate the campaigns against Austria and France. Düsseldorf was first mentioned in the 12th century. It was annexed with the Grand Duchy of Berg to Prussia in 1814. Population, 1905, 253,274; in 1920, 357,702.

DUTCH, the language and people of Holland, or the Netherlands. The name was originally applied to most of the Teutonic peoples, but beginning with the 17th century the people of Holland were designated as Dutch and all others of the Teutonic order as Germans.

DUTCH EAST INDIES, the territory of the East Indies under the control of the government of Holland. These possessions comprise Java and Madura; parts of Borneo, Sumatra, and New Guinea; the Riau-Lingga Archipelago, Banca, Billiton, Celebes, the Molucca Archipelago, and the Sunda Islands. The entire area is estimated at 736,500 square miles and the population at 35,095,500, of which about 75,000 are Europeans. As a whole it has remarkable fertility of soil and extensive productions of rice, coffee, sugar, tobacco, cotton, indigo, minerals, spices, and fruits. Many minerals abound, but the mines are not worked extensively. The government is administered by a governor general, who is appointed by the crown and assisted by a council of five members. Most of the islands are treated under separate titles, which see.

DUTCH GUIANA (gē-ä'nȧ), or **Surinam,** a possession of Holland in South America. See **Guiana.**

DUTIES, a term which signifies taxes, but in general use it is restricted to taxes levied upon imports and exports, and has much the same meaning as customs. *Ad valorem* duty is the duty levied upon imported merchandise at a given per cent. as invoiced by the importer. A *specific duty* is the duty chargeable on imported merchandise by quantity, weight, or number, without regard to value. The term *duty on water* is applied to the charges levied on water used in the irrigation of crops. See **Customs Duties; Tariff.**

DUYCKINCK (dī'kĭn̤k), **Evert Augustus,** author, born in New York City, Nov. 23, 1816; died Aug. 13, 1878. He graduated at Columbia College and studied law, but devoted himself to literature. His early writings were in the form of contributions to periodicals, and in 1840-42 he joined Cornelius Matthews in editing the monthly magazine *Arcturus.* In 1847-53 he and his brother George Long Duyckinck (1823-1863) edited "The Cyclopedia of American Literature." Subsequently he published "National Gallery of Eminent Americans," "History of the War for the Union," and "History of the World." His brother is the author of "Life of Jeremy Taylor," "Life of George Herbert," and "Life of Bishop Thomas Ken."

DVINA (dvē-nä'), or **Dwina.** See **Dwina.**

DVORÁK (dvôr-zhäk'), **Antonin,** musical composer, born in Mühlhausen, Bohemia, Sept. 8, 1841; died May 1, 1904. His father was a butcher and innkeeper. He first learned music from the gypsies and was taught to play on the violin by his teacher in the public school. At the age of sixteen years he entered the Prague Conservatoire, and was afterward appointed as an aid to the minister of public instruction. In 1872 a number of his productions were given in Berlin with much success, and in 1885 his "Spectre Bride" was received with enthusiasm at the Birmingham Festival, in England. Cambridge University conferred upon him the honorary degree of doctor of music in 1891. Subsequently he filled extended engagements in Berlin and Vienna with marked success, and in 1892 visited Canada and the United States. His cantata entitled "Columbus" was given successively at the Metropolitan Opera House in New York, where it attracted much favorable mention. The composition, "Stabat Mater," is one of his first great productions. Other works include "The King and the Collier," "In Nature," and "The Heirs of the White Hills."

DWARF (dwa̤rf), a term used to designate any plant or animal that is much smaller in size than the average size of development. Individual dwarfs occur in all plant and animal life, though those of the human race have attracted the greatest share of attention and study. Charles I. of England had a dwarf, Jeffery Hudson (1619-1682), who was only eighteen inches high at the age of seven years, but afterward grew to three feet ten inches. Wybrand Lolkes, a dwarf born in the Netherlands in 1730, was 27 inches tall at the age of sixty years, weighing 56 pounds. These and other celebrated dwarfs were kept as pets in the courts of princes and families of nobles. Dwarfs are now shown at exhibitions. Among the most celebrated dwarfs of America was Charles S. Stratton, known as General Tom Thumb. In 1863 he married Lavinia Warren. He was 31 inches in height and his bride was about one inch taller. Together with their dwarf child and Commodore Nutt, they were exhibited extensively in America and Europe. A dwarf of New York known as General Mite was only 21 inches tall.

Many of the dwarfs are unusually strong for their size and exhibit considerable intelligence. Several races of dwarfs are mentioned in history and some still exist. Aristotle described a race of dwarfs who inhabited caves on the banks of the Nile. The Akkas, who inhabit

Central Africa, are among the most noted of existing dwarf races. They were described by Stanley in 1881 as a brave people, though their average height does not exceed four feet ten inches. Several communities of dwarfs dwell in the Congo Free State, though they are more or less mixed with other tribes. The old Germanic legends mention numerous dwarf nations who had kings and a recognized form of government. It is quite probable that any of the stories met with as to their advancement in arts and sciences have been greatly exaggerated.

DWARFING, the process of training plants for ornamentation and useful purposes whereby their size is kept much below the normal. The process includes a special manner of planting, pruning of the roots, and pinching off of the stronger shoots. The art is practiced most extensively in China and Japan, where dwarfing is applied to ornamental trees and hedges. Besides pruning the stronger shoots, the limbs are bent and twisted in various ways and trained to develop into ornamental and beautiful forms. Some plants do not possess the characteristics which make them serviceable for dwarfing, even in fertile soil and under favorable climatic conditions. The osage orange, the acacia, and the arbor vitae are commonly dwarfed for hedges. Some fruits and the coffee tree yield larger returns when they are kept trimmed.

DWIGHT (dwīt), **Theodore,** journalist, born in Northampton, Mass., Dec. 15, 1764; died July 12, 1846. He was the brother of Timothy Dwight (1752-1817) and the grandson of Jonathan Edwards. He studied law and was admitted to the bar, and took part in politics as a Federalist. In 1806 he was elected to Congress, was secretary of the Hartford Convention in 1814, and the following year became editor of the Albany *Daily Advertiser.* He founded the New York *Daily Advertiser* in 1817, when he removed to New York City. His books include "A History of the Hartford Convention" and "Life and Character of Thomas Jefferson as Exhibited in His Own Writings."

DWIGHT, Theodore William, lawyer, born in Catskill, N. Y., July 18, 1822; died June 29, 1892. He was the son of Theodore Dwight (1764-1846), a celebrated American journalist, who attained much success as a statesman and writer. The son graduated at Hamilton College in 1840, and for some years was professor of political economy in that institution. Later he became professor of municipal law in Columbia College and lectured on law in Amherst and Cornell universities. His influence as a writer was marked, especially along the lines of reform. Among his publications are "Trial by Impeachment" and "American Political Institutions."

DWIGHT, Timothy, eminent educator, born in Norwich, Conn., Nov. 16, 1828. In 1849 he graduated from Yale and later studied theology for several years. In 1856-58 he studied in Berlin and Bonn, Germany. On his return to America he became professor of sacred literature in Yale Theological Seminary and was made president of Yale in 1886, which position he resigned in 1899. He is the author of a number of text-books, was influential as a lecturer, aided in revising the Bible, and was connected editorially with the *New Englander.* His chief publication is "The True Ideal of an American University." He died May 26, 1916.

DWIGHT, William Buck, scientist, born in Constantinople, Turkey, May 22, 1833. He was the son of Harrison Gray Otis Dwight (1803-1862), an American missionary. In 1849 he came to the United States and graduated at Yale University in 1854, and subsequently attended Union Theological Seminary and Yale Scientific School. He spent several years in examining mines in West Virginia and in 1867 became a teacher at West Point, and was made one of the two university examiners for the State of New York in 1894. Much time was given by him in making investigations of limestones in New York, especially in the Wappinger Valley. He contributed to periodical literature and published a number of works relating to geology. He invented a machine for cutting minerals and fossils into thin sections and edited a department in the "Standard Dictionary." He died Aug. 29, 1906.

DWINA (dwē'nȧ), or **Dvina,** an important river of northern Russia. It is formed by the junction of the Jug and Sukhona, has a northwesterly course, and flows into the White Sea by four mouths. It has a length of about 435 miles from its mouth to the point at which it is formed, and about 750 miles to the source of the Sukhona. The Vytchegda is the largest tributary. The entire system drains an area of 140,000 square miles, affords valuable means of inland navigation, and is rich in valuable fish. Large vessels cannot enter from the sea owing to shoals at its mouth, and it is obstructed by ice for about 175 days in the year. At Archangel it is four miles wide. Canals connect it with the Neva and the Volga.

DYAKS (dī'ăks), the name applied to the aborigines of Borneo, who chiefly inhabit the interior. They have made considerable advancement in agriculture and other arts. Their complexion is yellow, and in docility and industry they rank far above the Malays. In worship they are classed as pagans. Considerable advancement has been made in civilization, especially in the vicinity of Sarawak. The former practice of head hunting, an art in which they engaged to secure the heads of their enemies, has been abolished in all districts where Europeans have exercised influence. Most of the Dyaks are under the government of Holland.